IN TWO SECTIONS—SECTION TWO

Transactions of the ASME

SOCIETY RECORDS

(Including Indexes to Publications for 1957)

Where You Will Find the ASME Transactions in United States and Territories SR-93

In Other Countries SR-95

Indexes to ASME Papers and Publications SR-97

Regular Society Publications, 1957 . . . . . SR-97

Publications Issued in 1957 . . . . . SR-97

How to Find Papers Presented at 1957 ASME Meetings SR-97

Publications Developed by the Technical Committees SR-97

Books and Pamphlets SR-99

Biographies SR-99

Periodicals SR-100

ASME Miscellaneous Papers, 1956 . . . . . SR-101

Index to *Mechanical Engineering*, 1957 . . . . . SR-105

Index to Transactions of the ASME, 1957 . . . . . SR-133

Index to the *Journal of Applied Mechanics*, 1957 . . . . . SR-147

TRANSACTIONS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

VOLUME 80 JANUARY 1958 NUMBER 1

Transactions

of The American Society of Mechanical Engineers

Published on the tenth of every month, except March, June, September, and December

OFFICERS OF THE SOCIETY:

J. N. Landis, *President*

Edgar J. Kates, *Treasurer* — O. B. Schier, II, *Secretary*

H. J. Bauer, *Asst. Treasurer*

COMMITTEE ON PUBLICATIONS:

Kerr Atkinson, *Chairman*

John de S. Coutinho — Hendley N. Blackmon

B. G. A. Skrotzki — R. D. Mindlin

N. J. Viehmann, A. T. Wuska } *Junior Advisory Members*

George A. Stetson, *Editor Emeritus* — Leo Blodgett, *Consulting Editor*

J. J. Jaklitsch, Jr., *Editor* — J. A. North, *Production*

REGIONAL ADVISORY BOARD OF THE PUBLICATIONS COMMITTEE:

Roy L. Parsell—I
Glenn R. Fryling—II
F. J. Heinze—III
Francis C. Smith—IV
H. M. Cather—V
C. R. Earle—VI
M. B. Hogan—VII
Linn Helander—VIII

Published monthly by The American Society of Mechanical Engineers. Publication office at 20th and Northampton Streets, Easton, Pa. The editorial department is located at the headquarters of the Society, 29 West Thirty-Ninth Street, New York 18, N. Y. Cable address, "Mechaneer," New York. Price $1.50 a copy, $12.00 annually for Transactions and the *Journal of Applied Mechanics;* to members, $1.00 a copy, $6.00 annually Add $1.50 for postage to all countries outside the United States, Canada, and Pan American Union. Changes of address must be received at Society headquarters seven weeks before they are to be effective on the mailing list. Please send old as well as new address.... By-Law: The Society shall not be responsible for statements or opinions advanced in papers or ... printed in its publications (B13, Par. 4).... Entered as second-class matter March 2, 1928, at the Post Office at Easton, Pa., under the Act of August 24, 1912...©Copyrighted, 1958, by The American Society of Mechanical Engineers. Reprints from this publication may be made on condition that full credit be given the Transactions of the ASME and the author, and that date of publication be stated.

Where You Will Find the ASME Transactions

In UNITED STATES AND TERRITORIES

Alabama

Auburn — Alabama Polytechnic Institute
Engrg. Library-Ramsey Engrg. Bldg.
Birmingham — Public Library
University — University of Alabama Library
Periodical Room

Arizona

Tucson — University of Arizona
Mech. Engrg. Dept. Library

Arkansas

Fayetteville — University of Arkansas
College of Engrg. Library

California

Berkeley — University of California
Engrg. Library
Davis — University of California
College of Agriculture Library
Long Beach — Public Library
Los Angeles — Public Library-Serials Div.
University of Southern California
Engrg. Library
Monterey — U. S. Naval Academy Postgraduate School
Mech. Engrg. Dept.
Oakland — Public Library
Pasadena — California Institute of Technology
General Library and
Mech. Engrg. Dept. Library
Santa Clara — University of Santa Clara
Varsi and Engrg. Dept. Libraries
San Diego — Public Library
San Diego State College Library
San Francisco — Mechanics Institute
Public Library (Civic Center)
Stanford Univ — Stanford University
Mech. Engrg. Dept. Library

Colorado

Boulder — University of Colorado
Science & Technology Section
Denver — *Public Library
University of Denver
Serial Div. Library
Fort Collins — Colorado State University Library
Golden — Colorado School of Mines Library and
Mech. Engrg. Dept. Library

Connecticut

Bridgeport — *Burroughs Public Library
Hartford — *Public Library, Business and Technical
Dept.
New Haven — Public Library
Yale University
Engrg. Library, Dunham Laboratory
Storrs — University of Connecticut Library
Waterbury — Silas Bronson Library

Delaware

Newark — University of Delaware
Memorial Library

District of Columbia

Washington — George Washington University Library
Catholic University of America
Engrg. and Math. Library
Library of Congress
National Bureau of Standards Library
Scientific Library, U. S. Patent Office

Florida

Gainesville — University of Florida
Library, Serials Dept.
Jacksonville — Public Library

Georgia

Atlanta — Carnegie Public Library
Georgia Institute of Technology Library

Hawaii

Honolulu — University of Hawaii Library

Idaho

Moscow — University of Idaho
College of Engrg. Reading Room

Illinois

Chicago — *John Crerar Library
Illinois Institute of Technology
Mech. Engrg. Dept. Library
University of Chicago
Eckhart Library
University of Illinois (Navy Pier Div.)
University Library
Evanston — Northwestern University
Deering Library
Moline — *Public Library
Peoria — Public Library
Bradley University
University Library and Students'
Reading Rm.—Mech. Engrg. Dept.
Springfield — Illinois State Library
Urbana — University of Illinois
Engrg. Library and
Mech. Engrg. Dept. Library

Indiana

Fort Wayne — Public Library
Indianapolis — Public Library
*Indiana State Library
Notre Dame — University of Notre Dame
Engrg. Library—Cushing Hall of Engrg.
Terre Haute — Rose Polytechnic Institute
University Library
West Lafayette — Purdue University
Aero., Elec., and Engrg. Science Library

Iowa

Ames — Iowa State College
Mech. Engrg. Dept. Library
Davenport — *Public Library—Reference Dept.
Des Moines — *Public Library
Iowa City — State University of Iowa
Mech. Engrg. Dept. Library

Kansas

Kansas City — *Public Library, Huron Park
Lawrence — University of Kansas
Engrg. and Main Libraries
Manhattan — Kansas State College Library and
Mech. Engrg. Dept.
Wichita — Wichita City Library

Kentucky

Lexington — University of Kentucky
College of Engrg. Library
Louisville — Speed Scientific School of
University of Louisville

Louisiana

Baton Rouge — Louisiana State College
Engrg. Library
New Orleans — The Howard-Tilton Memorial Library of
Tulane University
*Public Library
Ruston — Louisiana Polytechnic Institute
Engrg. Library and
Mech. Engrg. Dept. Library

---

* Offers photoprint service.

Maine

Orono.....University of Maine Library

Maryland

Annapolis.....United States Naval Academy Library
Baltimore.....Johns Hopkins University
Mech. and Elec. Engrg. Dept. Library
*Enoch Pratt Free Library
College Park.....University of Maryland
Engrg. Library and
Mech. Engrg. Dept. Library

Massachusetts

Amherst.....University of Massachusetts Library
Mech. Engrg. Dept. Library
Boston.....Public Library
Northeastern University
School of Engrg. Library
Cambridge.....Massachusetts Institute of Technology
Periodical Dept.—Hayden Library
Lowell .....Lowell Technological Institute
Lynn.....Public Library
New Bedford.....*Public Library
Business and Technical Section
Springfield.....*Springfield City Library
Tufts College.....Tufts College Engrg. Library
Worcester.....Public Library
Worcester Polytechnic Institute
Mech. Engrg. Dept. Library

Michigan

Ann Arbor.....University of Michigan
Engrg. Library
Detroit.....Public Library
University of Detroit
University Library and
Mech. Engrg. Dept. Library
Wayne University
Mech. Engrg. Dept.
East Lansing.....Michigan State College
Engrg. Library
Flint.....Public Library
Grand Rapids....*Public Library
Business and Technology Section
Highland Park...McGregor Public Library
Houghton.....Michigan College of Mining & Technology
College Library
Jackson.....Public Library
Muskegon.....Hackley Public Library
Saginaw.....Hoyt Public Library
Sault Ste. Marie..Michigan College of Mining and Technology
Mech. Engrg. Dept. Library

Minnesota

Duluth.....Public Library
Minneapolis.....*Minneapolis Public Library
University of Minnesota
Engrg. Library
St. Paul.....*James Jerome Hill Reference Library

Mississippi

State College.....Mississippi State College
General Library

Missouri

Columbia.....University of Missouri
Engrg. Library and
Mech. Engrg. Dept. Library
Kansas City.....*Public Library
Rolla.....Missouri School of Mines and Metallurgy
Engrg. Library and
Mech. Engrg. Dept. Library
St. Louis.....*Public Library
Washington University
Engrg. Library

Montana

Bozeman.....Montana State College
Engrg. Library

Nebraska

Lincoln .....University of Nebraska
Love Library
Omaha.....*Public Library

Nevada

Reno.....University of Nevada
Mech. and Civil Engrg. Depts. Library

New Hampshire

Concord.....New Hampshire State Library
Durham.....University of New Hampshire
Hamilton Smith Library
Hanover.....Dartmouth College
Thayer School of Engrg.

New Jersey

Camden.....Public Library
Hoboken.....Stevens Institute of Technology Library
Newark.....Public Library
Newark College of Engineering Library
New Brunswick..Rutgers University Library and
Mech. Engrg. Dept. Library
Paterson.....Public Library
Princeton.....Princeton University
School of Engrg. Library
Trenton.....*Public Library

New Mexico

Albuquerque.....University of New Mexico
University Library and
Mech. Engrg. Dept. Library
State College.....New Mexico College of Arts
College Library and
Mech. Engrg. Dept. Library

New York

Albany.....*New York State University
Brooklyn.....Polytechnic Institute
Spicer Library
Pratt Institute
Main Library
*Brooklyn Public Library
Science & Industry Div.
Buffalo.....University of Buffalo
Lockwood Memorial Library
Buffalo and Erie County Public Library
Ithaca.....Cornell University
Sibley School Library
Jamaica, L. I.....*Queens Borough Public Library
New York.....College of the City of New York
School of Technology Library
Columbia University
Egleston Library (Engr.)
Cooper Union
Main Library
Engineering Societies Library
New York University
Engr. Library—University Heights
Rm. 312A, Washington Sq.
Public Library, Fifth Ave. & 42nd St.
Science and Technology Div.
Potsdam.....Clarkson College of Technology Library
Rochester.....University of Rochester
Engrg. Library
Schenectady.....Union College Library
Syracuse.....Public Library
Syracuse University
Engr. Library and
Mech. Engrg. Dept. Library
Troy.....Rensselaer Polytechnic Institute Library

North Carolina

Durham.....Duke University
College of Engrg. Library
Raleigh.....North Carolina State College Library

North Dakota

Fargo.....North Dakota State Agricultural College
Engrg. Library
Grand Forks.....University of North Dakota
Engrg. Library

Ohio

Ada.....Ohio Northern University
Akron.....Public Library
University of Akron
Engrg. Library

Ohio (continued)

Athens.....Ohio University Library and Mech. Engrg. Dept. Library
Cincinnati.....Public Library
University of Cincinnati Serials Div.—General Library
Cleveland.....Case Institute of Technology Mech. Engrg. Dept. Library
Fenn College Mech. Engrg. Dept. Library
*Public Library
Columbus.....Ohio State University Main Library and Mech. Engrg. Dept. Library
Public Library
Dayton.....Engineers Club of Dayton
University of Dayton Mech. Engrg. Dept.
Toledo.....*Public Library
University of Toledo Library
Youngstown.....Public Library
Youngstown University

Oklahoma

Norman.....University of Oklahoma College of Engrg. Library
Oklahoma City...Public Library
Stillwater.....Oklahoma A & M College Engrg. Library
Tulsa.....*Public Library
University of Tulsa Library

Oregon

Corvallis.....Oregon State College Engrg. & Technology Room—College Library
Portland.....*Portland Library Association

Pennsylvania

Allentown.....*Free Library
Bethlehem.....Lehigh University Engrg. Library
Easton.....Lafayette College Library
Erie.....Public Library
Haverford.....Haverford College
Lewisburg.....Bucknell University Library
Philadelphia.....Drexel Institute Library
*The Franklin Institute
*The Free Library
University of Pennsylvania Towne Scientific Library
Pittsburgh.....Carnegie Institute of Technology Mech. Engrg. Library
Carnegie Library (Schenley Park)
*Mellon Institute of Industrial Research Library
University of Pittsburgh Science-Technology Library and Mech. Engrg. Dept. Library
Reading.....Public Library
Scranton.....Public Library
State College.....Pennsylvania State University Carnegie Library
Swarthmore.....Swarthmore College Div. of Engrg. Library
Villanova.....Villanova University Reference Room, Engrg. Library

Puerto Rico

Mayaguez.....University of Puerto Rico

Rhode Island

Kingston.....The University of Rhode Island Library and Mech. Engrg. Dept.
Providence.....Brown University Physical Science Library
Providence Engineering Society
*Public Library

South Carolina

Clemson College..Clemson Agricultural College Central Library
Columbia.....University of South Carolina McKissick Memorial Library

South Dakota

Brookings.....South Dakota State College Library
Rapid City.....South Dakota School of Mines and Technology, Mech. Engrg. Dept. Library

Tennessee

Knoxville.....University of Tennnessee Engrg. Library
Memphis.....Goodwin Institute
Nashville.....Joint University Libraries Engineering & Science Section

Texas

Austin.....University of Texas Engineering Library
Beaumont.....Lamar State College of Technology Spindletop Engrg. Library
College Station...Texas Agricultural & Mechanical College Engrg. Library and Mech. Engrg. Dept. Library
Dallas.....*Public Library
Southern Methodist University Library
El Paso.....Public Library
Fort Worth.....Carnegie Public Library
Houston.....Public Library
Rice Institute Fondern Library
Lubbock.....Texas Technological College Library

Utah

Salt Lake City...University of Utah Engrg. & Physical Science Section, of Main Library

Vermont

Burlington.....University of Vermont, Billings Library
Northfield.....Norwich University Mech. Engrg. Dept. Library

Virginia

Blacksburg.....Virginia Polytechnic Institute Library
Lexington.....Virginia Military Institute Library
Richmond.....Virginia State Library
University.....University of Virginia Alderman Library

Washington

Pullman.....State College of Washington Institute of Technology Library
Seattle.....Public Library
University of Washington Engrg. Library
Spokane.....Public Library
Tacoma.....Public Library

West Virginia

Morgantown.....West Virginia University Library

Wisconsin

Madison.....University of Wisconsin Library
Milwaukee.....Marquette University Mech. Engrg. Dept.
*Public Library

Wyoming

Laramie.....Wyoming University Library Mech. Engrg. Dept.

IN OTHER COUNTRIES

Argentina

Buenos Aires.....Biblioteca de la Sociedad Cientifica
Facultad de Ciencias Exactas, Fisicas y Naturales

Australia

Adelaide.....Public Library of Adelaide
Brisbane.....University of Queensland
Canberra.....Australian National University
Melbourne.....Public Library of Victoria
University of Melbourne

Australia (continued)

Perth	University of Western Australia Library
Sydney	Public Library of Sydney
	Public Library of New South Wales
	Sydney Technical College
	University of Sydney
Wollongong	Wollongong Technical College

Austria

Vienna	Documentation Center of Technology
	Technische Hochschol

Belgium

Louvain	Library, University Louvain

Brazil

Rio de Janeiro	Bibliotheca da Escola Polytechnica
	Secao de Permuta Internacional
São Paulo	Bibliotheca da Escola Polytechnica
	Centro Technico de Aeronautica

Burma

Rangoon	University of Rangoon

Canada

Edmonton	University of Alberta
Hamilton	Hamilton Public Library
Kingston	Queen's University
	Mech. Engrg. Dept. Library
Montreal	École Polytechnique
	Engineering Institute of Canada
	McGill University
Quebec	Faculté Des Sciences
Saskatchewan	University of Saskatchewan
Toronto	University of Toronto
	Mech. Engrg. Dept. Library
Vancouver	University of British Columbia
	Mech. Engrg. Dept. Library
Winnipeg	University of Manitoba

Chile

Santiago	Universidad de Chile, Facultad de Ciencias Fisicas y Matematicas

Cuba

Havana	Cuban Society of Engineers

England

Birmingham	Birmingham Public Libraries
Bristol	University of Bristol
Cambridge	University of Cambridge
Coventry	Gulson Central Library
Hants	Southampton University
Leeds	University of Leeds
Liverpool	Liverpool Engineering Society
	Public Library of Liverpool
London	City and Guild Engineering College
	Institute of Marine Engineers
	Institution of Civil Engineers
	Institution of Electrical Engineers
	Institution of Mechanical Engineers
	Iron and Steel Institution
	Junior Institution of Engineers
	Patent Office Library
	Royal Aeronautical Society
	Science Museum Library
Manchester	Manchester Public Libraries
	College of Technology
	University of Manchester
Newcastle-upon-Tyne	The North-East Coast Institution of Engineers and Shipbuilders
Oxford	Oxford University
Sheffield	Sheffield Public Libraries

France

Paris	Écoles Nationales des Arts et Metiers
	École Centrale des Arts et Manufacturers
	Soc. des Ingenieurs Civils
	The American Library

Germany

Berlin	Bibliothek der Technischen Hochschule
	Zeitschrift für Angewandte Mathematik und Mechanik
Dusseldorf	Verein Deutscher Ingenieure
	Bucherei des Vereines Deutscher Eisenhuttenleute
Hamburg	Bibliothek der Technischen Staatslehranstalten
Hanover	Bucherei der Technischen Hochschule
Karlsruhe	Bucherei der Technischen Hochschule
Koln	Universitats- u. Stadtbibliothek
Leipsic	Stadtbibliothek
Munchen	Bibliothek der Technischen Hochschule
	Bucherei des Deutschen Museums
Stuttgart	Bucherei der Technischen Hochschule

Holland

Amsterdam	Koninklyke Akademie von Wetenschappen
Delft	Bibliotheek Technische Hoogeschool
The Hague	Koninklijk Instituut van Ingenieure
Rotterdam	Nationaal-Technisch-Scheepvaartkundig Instituut

India

Bangalore	Mysore Engineers Association
Calcutta	Bengal Engineering College
Poona	Poona College of Engineering

Ireland

Belfast	Queen's University of Belfast

Italy

Milano	Biblioteca R. Scuola d'Ingegneria
Napoli	Facolta' d'Ingegneria Universita
Rome	Biblioteca R. Scuola d'Ingegneria
	Consiglio Nazionale delle Ricerche
	Servizio Technico Della Aeronautica
Torino	Biblioteca del Politechnico

Japan

Tokyo	The Japan Society of Mechanical Engineers

Mexico

Mexico City	Benjamin Franklin Library

New Zealand

Christ Church	Canterbury University College

Norway

Oslo	Den Polytekniske Forening

Portugal

Lisbon	Institute Superior Technico

Scotland

Glasgow	Royal Technical College
	Mitchell Library

South Africa

Cape Town	University of Cape Town
Durban	University of Natal
Johannesburg	South African Institute of Mechanical Engineers

Sweden

Gothenburg	Chalmers Tekniska Institut
Stockholm	Kungl. Tekniska Hogskolans Bibliotek
	Svenska Teknologforeningen
Uppsala	University of Uppsala

Switzerland

Zürich	Bibliothek der Eidg. Technischen Hochschule
	International Committee of Scientific Management
	L'École Polytechnique Féderale

Turkey

Istanbul	Robert College

Wales

Cardiff	Cardiff Public Libraries

Indexes to ASME Papers and Publications

THIS and the following pages will serve as a guide to the current publications of the ASME.

Regular Society Publications, 1957

Mechanical Engineering, monthly (see index on page SR-105)
ASME Transactions, monthly (see index on page SR-133)
Journal of Applied Mechanics, quarterly (see index on page SR-147)
ASME Mechanical Catalog, 1958 edition.
Applied Mechanics Reviews, monthly.
Smog News, bimonthly

Publications Issued in 1957

Books and Pamphlets
- 1956 ASME Transactions (bound form)
- 77-Year Index to ASME Technical Papers
- Directory of Consulting Engineers
- 1956 Report on Oil and Gas Engine Power Costs
- Proceedings of 1955 Joint Conference on Combustion
- Proceedings of 1957 Design Engineering Conference
- Proceedings of 1957 Oil and Gas Power Division Conference
- Resistance of Various Materials to Cavitation Damage
- Thermodynamic Properties of Compressed Water
- Advances in Nuclear Engineering
- Hot Laboratory Operation and Equipment
- Problems in Nuclear Engineering
- Reactor Operational Problems
- Professional Amateur—The Biography of Charles Franklin Kettering

Safety Codes and Standards
- 1957 Addenda to:
  - Power Boiler Code
  - Material Specifications
  - Low-Pressure Heating Boiler Code
  - Unfired Pressure Vessel Code
  - Suggested Rules for Care of Power Boiler
  - Welding Qualifications
- Boiler and Pressure Vessel Code Interpretations
- Carbide Blanks and Cutting Tools
- Drafting Standards Manual
  - Section 1, Size and Format
  - Section 2, Line Conventions, Sectioning, and Lettering
  - Section 4, Pictorial Drawing
  - Section 5, Dimensioning and Notes

Face-to-Face and End-to-End Dimensions of Ferrous Valves
Glossary of Terms in Nuclear Science and Technology
Handbook for Small Sawmill Operators
Machine Mounting Specifications for Abrasive Disks and Plate Mounted Wheels
Stainless-Steel Pipe

How to Find Papers Presented at 1957 ASME Meetings

THE technical programs of the meetings of the Society and of its Professional Divisions have been published in *Mechanical Engineering* and may be located by consulting the index on pages SR-105 to SR-131. Many of these papers will be published in *Mechanical Engineering* or the *Transactions* (including the *Journal of Applied Mechanics*) and may be located by reference to the indexes of these publications.

Publications Developed by the Technical Committees

THE Society's technical committees, the first of which was organized many years ago and all of which have been continuously at work on codes, standards, research, and other special reports, have developed a series of publications of permanent value to the membership. The following list is presented here for record and for ready reference. This list covers the works of these committees together with dates of publications and prices. A discount of 20 per cent is allowed to ASME members on all publications except where statement "No discount allowed" appears after price.

ASME AMERICAN STANDARDS

Bolt, Nut, and Rivet Proportions

Hexagon and Slotted Head Cap Screws—Square Head Set Screws—Slotted Headless Set Screws (B18.6.2—1956), $1.50
Large Rivets (B18.4—1950), $1.50
Plow Bolts (B18.9—1950), $1.50
Round Head Bolts (B18.5—1952), $1.00
Slotted and Recessed Head Wood Screws (B18.6.1—1956), $1.00
Small Solid Rivets (B18.1—1955), $1.50
Socket Head Cap Screws and Socket Set Screws (B18.3—1954), $1.50
Square and Hexagon Bolts and Nuts and Lag Bolts (B18.2—1955), $2.00
Track Bolts and Nuts (B18.10—1952), $1.50
High-Strength, High-Temperature Internal Wrenching Bolts (B18.8—1950), $1.00

Gear Design, Dimensions, and Inspection

Design for Fine-Pitch Worm Gearing (B6.9—1956), $1.50
Fine-Pitch Straight Bevel Gears (B6.8—1950), $1.00
Gear Nomenclature (B6.10—1954), $1.50
Inspection of Fine-Pitch Gears (B6.11—1956), $2.50
Gear Tolerances and Inspection (B6.6—1946), $1.50
Letter Symbols for Gear Engineering (B6.5—1954), $1.50
Spur Gear Tooth Form (B6.1—1932), $1.00
20-Degree Involute Fine-Pitch System for Spur and Helical Gears (B6.7—1956), $1.50
Nomenclature for Gear Tooth Wear and Failure (B6.12—1954), $1.50
System for Straight Bevel Gears (B6.13—1955), $1.00

Piping, Pipe Fittings, and Threads

Air Gaps and Backflow Preventers in Plumbing Systems (A40.4—1942 and A40.6—1943), $1.50
Brass Fittings for Flared Copper Tubes (A40.2—1936), $1.50
Brass or Bronze Flanges and Flanged Fittings for 150 and 300 Lb (B16.24—1953), $1.00
Brass or Bronze Screwed Fittings for 125 Lb (B16.15—1949; reaffirmed 1952), $1.50
Brass or Bronze Screwed Fittings for 250 Lb (B16.17—1949; reaffirmed 1953), $1.00
Butt-Welding Ends (B16.25—1955), $1.00
Cast-Brass Solder-Joint Fittings (B16.18—1950), $1.50
Cast-Brass Solder-Joint Drainage Fittings (B16.23—1956), $1.50
Cast-Iron Pipe Flanges and Flanged Fittings for 25 Lb Maximum Saturated Steam Pressure (B16b2—1931; reaffirmed 1952), $1.00
Cast-Iron Pipe Flanges and Flanged Fittings Class 125 (B16.1—1948, reaffirmed 1953), $1.50
Cast-Iron Pipe Flanges and Flanged Fittings Class 250 (B16b—1944; reaffirmed 1953), $1.50

Cast-Iron Pipe Flanges and Flanged Fittings for Refrigerant Piping, Class 300 (B16.16—1948; reaffirmed 1952), $1.00
Cast-Iron Pipe Flanges and Flanged Fittings for 800 Lb Maximum Hydraulic Pressure (B16b1—1931; reaffirmed 1952), $1.00
Cast-Iron Soil Pipe and Fittings (A40.1—1935), $2.00
Cast-Iron Screwed Fittings for 125 and 250 Lb Maximum Saturated Steam Pressure (B16.4—1949; reaffirmed 1953), $1.50
Cast-Iron Screwed Drainage Fittings (B16.12—1953), $1.00
Face-to-Face and End-to-End Dimensions of Ferrous Valves (B16.10—1957), $1.50
Ferrous Plugs, Bushings, Lock Nuts, With Pipe Threads (B16.14—1949; reaffirmed 1953), $1.00
Malleable-Iron Screwed Fittings, 150 Lb (B16.3—1951), $1.50
Malleable-Iron Screwed Fittings, 300 Lb (B16.19—1951), $1.00
Nonmetallic Gaskets for Pipe Flanges (B16.21—1951), $1.00
Pipe Threads (B2.1—1945), $2.50
Ring-Joint Gaskets and Grooves for Steel Pipe Flanges (B16.20—1956), $1.00
Scheme for the Identification of Piping Systems (A13.1—1956), $1.00
Steel Pipe Flanges and Flanged Fittings for 150, 300, 400, 600, 900, 1500, and 2500 Lb, Including References to Valves (B16.5—1953), $3.00
Stainless-Steel Pipe (B36.19—1957), $1.00
Steel Butt-Welding Fittings (B16.9—1951), $1.50
Steel-Socket Welding Fittings (B16.11—1946; reaffirmed 1952), $1.00
Threaded Cast-Iron Pipe for Drainage, Vent, and Waste Services (A40.5—1943), $1.00
Wrought-Copper and Wrought-Bronze Solder-Joint Fittings (B16.22—1951), $1.00
Wrought-Steel and Wrought-Iron Pipe (B36.10—1950), $1.50

Letter and Graphical Symbols and Charts

Abbreviations for Scientific and Engineering Terms (Z10.1—1941), $0.50
Abbreviations for Use on Drawings (Z32.13—1950), $1.25
Drafting Standards Manual
  Section 1, Size and Format (Y14.1—1957), $1.00
  Section 2, Line Convections, Sectioning, and Lettering (Y14.2—1957), $1.50
  Section 4, Pictorial Drawing (Y14.4—1957), $1.50
  Section 5, Dimensioning and Notes, (Y14.5—1957), $2.00
Time Series Charts (Z15.2—1947), $1.50
Graphical Symbols for Welding and Instructions for Their Use (Z32.2.1—1949), $3.00
Graphical Symbols for Plumbing (Y32.4—1955), $1.00
Graphical Symbols for Pipe Fittings, Valves, and Piping (Z32.2.3—1949; reaffirmed, 1953), $1.00
Graphical Symbols for Heating, Ventilating, and Air Conditioning (Z32.2.4—1949), $1.50
Graphical Symbols for Railway Use (Z32.2.5—1950), $1.50
Graphical Symbols for Heat—Power Apparatus (Z32.2.6—1950; reaffirmed, 1956), $1.00
Letter Symbols for Chemical Engineering (Y10.12—1955), $1.50
Letter Symbols for Hydraulics (Z10.2—1942), $1.00
Letter Symbols for Mechanics of Solid Bodies (Z10.3—1948), $1.00
Letter Symbols for Heat and Thermodynamics (Z10.4—1943), $1.50
Letter Symbols for Physics (Z10.6—1948), $2.00
Letter Symbols for Aeronautical Sciences (Y10.7—1954), $2.00
Letter Symbols for Structural Analysis (Z10.8—1949), $1.00
Letter Symbols for Radio (Y10.9—1953), $1.00
Letter Symbols for Meteorology (Y10.10—1953), $1.00
Letter Symbols for Acoustics (Y10.11—1953), $1.00

Standard—Miscellany

Automatic Control Terminology (ASME Standard No. 105—1954), $1.50
Glossary of Terms in Nuclear Science and Technology (N1.1—1957), $5.00
Indicating Pressure and Vacuum Gages (B40.1—1939; reaffirmed 1953), $1.50
Industrial Engineering Terminology (ASME Standard No. 106—1955), $1.50
Preferred Thickness for Uncoated Thin Flat Metals (Under 0.250 In.) (B32.1—1952), $1.00
Preferred Standards for Large 3600-RPM 3-Phase 60-Cycle Condensing Steam Turbine Generators and Standard Specification Data for the Generators (1952), (ASME Standard No. 100—1952), $1.00
One-Piece Metallic Piston Rings (ASME Standard No. 104—1954), $1.00
Operation and Flow Process Charts (ASME Standard No. 101—1947), $1.50
Shaft Couplings (B49.1—1947), $1.00
Lock Washers (B27.1—1950), $1.50
Plain Washers (B27.2—1953), $1.00
Surface Roughness, Waviness, and Lay (B46.1—1955), $1.50
Self-Appraisal Form for Use of Industrial Plants (ASME Standard No. 102–1947), $2.00
Plant Layout Templates and Models (ASME Standard No. 103—1949), $1.50
Preferred Standards for the Presentation of Frequency Response Data (ASME Standard No. 107—1955), $1.00
Woodruff Keys, Keyslots, and Cutters (B17f—1930; reaffirmed 1955), $1.00

Small Tools and Machine-Tool Elements

Machine Tapers (B5.10—1953), $1.50
Milling Cutters (B5.3—1950), $3.00
Nomenclature for Milling Cutter Teeth (B5cl—1947), $1.50
Reamers (B5.14—1949), $2.00
Taps—Cut and Ground Threads (B5.4—1948), $2.00
Drill Drivers (B5.27—1951), $1.00
Accuracy of Engine and Tool Room Lathes (B5.16—1952), $1.00
Carbide Blanks and Cutting Tools (B5.36—1957), $2.00
Chucks and Chuck Jaws (B5.8—1954), $1.50
Circular and Dovetailed Forming Tool Blanks (B5.7—1954), $1.50
Designation and Working Ranges of Grinding Machines (B5.32 and 33—1953), $1.00
Involute Serrations (B5.26—1950), $2.00
Involute Splines (B5.15—1950), $3.00
Involute Spline and Serration Gages and Gaging (B5.31—1953), $1.50
Jig Bushings (B5.6—1941; reaffirmed 1949), $1.00
Knurling (B5.30—1953), $1.50
Life Tests of Single-Point Tools (B5.19—1946; reaffirmed 1953), $1.00
Life Tests for Single Point Tools of Sintered Carbide (B5.34—1956), $1.00
Machine Pins (B5.20—1954), $1.00
Marking for Grinding Wheels (B5.17—1949; reaffirmed 1953), $1.00
Machine Mounting Specifications for Abrasive Disks and Plate Mounted Wheels (B5.35—1957), $1.50
Mounting Dimensions of Lubricating and Coolant Pumps for Machine Tools (B5.28—1952), $1.00
Punch and Die Sets for Two-Post, Punch Press Tools (B5.25—1950), $1.50
Rotating Air Cylinders and Adapters (B5.5—1954), $1.00
Single-Point Cutting Tools and Tool Posts (B5.22—1950), $2.00
Spindle Noses and Arbors for Milling Machines (B5.18—1953), $1.00
Spindle Noses and Adjustable Adapters for Multiple Spindle Drilling Heads (B5.11—1954), $1.00
Spindle Noses for Tool Room Lathes, Engine Lathes, Turret Lathes, and Automatic Lathes (B5.9—1954), $2.50
Straight Cut-Off Blades for Lathes and Screw Machines (B5.21—1949), $1.00
T-Slots, Their Bolts, Nuts, Tongues, and Cutters (B5.1—1949), $1.50
Twist Drills (B5.12—1950), $1.50

Screw Threads and Threading Tools

Acme Screw Threads (B1.5—1952), $2.25
Stub Acme Screw Threads (B1.8—1952), $1.50
Buttress Screw Threads (B1.9—1953), $1.50
Fire Hose Coupling Screw Thread (B26—1925; reaffirmed 1953), $1.00
Hose Coupling Screw Threads (B33.1—1935; reaffirmed, 1947), $1.00
Unified and American Screw Threads, 3rd Edition (B1.1—1949), $3.00
Nomenclature, Definitions, and Letter Symbols for Screw Threads (B17—1949; reaffirmed 1953), $1.50
Screw Thread Gages and Gaging (B1.2—1951), $4.00
Preferred Limits and Fits for Cylindrical Parts (B4.1—1955), $1.50

ASME BOILER AND PRESSURE VESSEL CODE

1956 Editions
  Power Boiler Code with 1956–1957 Addenda, $5.00
  Material Specifications with 1956–1957 Addenda, $10.50
  Low-Pressure Heating Boiler Code with 1957 Addenda, $1.25
  Unfired Pressure Vessel Code with 1956–1957 Addenda, $6.00
  Welding Qualifications with 1956–1957 Addenda, $1.75
1954 Editions
  Suggested Rules for Care of Power Boilers, with 1957 Addenda, $3.00

1952 Editions
Boilers for Locomotives, $1.25
Miniature Boilers, $1.00
1956 Interpretation Case Book and 1957 Interpretations, $10.00
Interpretations of and Addenda to the ASME Boiler and Pressure Vessel Code, Subscription Price, $7.50 Annually

POWER TEST CODES AND AUXILIARY SECTIONS

Test Codes for

Centrifugal, Mixed-Flow and Axial-Flow Compressors and Exhausters (1949), $2.00
Centrifugal Pumps (1954), $1.50
Coal Pulverizers (1944), $1.50
Determining Dust Concentrations in a Gas Stream (1957), $2.50
Displacement Compressors, Vacuum Pumps, and Blowers (1954), $2.00
Dust Separating Apparatus (1941), $2.00
Ejectors and Boosters (1956), $2.00
Evaporating Apparatus (1955), $1.50
Fans (1946), $1.00
Feedwater Heaters (1955), $1.50
Gaseous Fuels (1944), $2.00
Gas Turbine Power Plants (1953), $2.00
Hydraulic Prime Movers (1949), with Index Method of Testing (1953), $2.00
Reciprocating Steam-Driven Displacement Pumps (1949), $1.00
Reciprocating Steam Engines (1935; reaffirmed 1949), $2.00
Solid Fuels (1954), $2.50
Stationary Steam Generating Units (1946), $2.00
Steam Condensing Apparatus (1955), $2.00
Steam Turbines (1949), $3.00
Appendix to Steam Turbine Test Code (1949), $3.00

Instruments and Apparatus

General Instructions (1945), $1.50
Definitions and Values, $2.00
Part 1—General Considerations (1935), $1.50
Part 2—Pressure Measurement
Chapter 1, Barometers; Chapter 6, Tables, Multipliers, and Standards (1941), $1.50
Chapter 4, Bourdon, Bellows, Diaphragm, and Deadweight Gages (1938), $1.50
Chapter 5, Liquid Column Gages (1942), $1.50
Part 3—Temperature Measurement
Chapter 2, Radiation Pyrometers (1936), $1.00
Chapter 4, Resistance Thermometers (1945), $1.50
Chapter 8, Optical Pyrometers (1940), $1.00
Part 4—Head Measuring Apparatus (1933), $1.00
Part 6—Electrical Measurement for Power Circuits (1955), $2.00
Part 8—Measurement of Indicated Horsepower (1941), $1.50
Part 10—Flue and Exhaust Gas Analyses (1936), $2.00
Part 13—Speed Measurements (1939), $1.50
Part 14—Linear Measurements (1936), $1.00
Part 15—Measurement of Surface Areas (1944), $1.50
Part 16—Density Determinations (1931), $1.00
Part 17—Determination of the Viscosity of Liquids (1931), $2.00
Part 20—Smoke-Density Determinations (1945), $1.50
Part 21—Leakage Measurements (1942), $1.50

SAFETY CODES

Code for Pressure Piping (B31.1—1955), $3.50
Gas Transmission and Distribution Piping Systems (B31.1.8—1955), $2.50
National Plumbing Code (A40.8—1955), $3.50
Safety Code for Cranes, Derricks, and Hoists (B30.2—1943; reaffirmed 1952), $2.50
Safety Code for Elevators (A17.1—1955), $3.50
Elevator Inspectors' Manual (A17.2—1945), $2.50
Safety Code for Jacks (B30.1—1943; reaffirmed 1952), $1.00
Safety Code for Mechanical Power-Transmission Apparatus (B15.1—1953), $2.00
Safety Code for Industrial Power Trucks (B56.1—1955), $1.50
Safety Code for Manlifts (A90.1—1949; reaffirmed, 1956), $1.00

Books and Pamphlets

Guide to Research in Air Pollution (1956), $1.50
Instruments for the Study of Atmospheric Pollution (1956), $2.00
Problems and Control of Air Pollution (1955), $7.50
An ASME Paper (1955), $0.50
Bibliographies of
Cutting of Metals (1945), $6.50
Riveted Joints (1945), $3.00
Gas Turbines (1950), $1.00
Plasticity, Its Theory and Applications (1950), $2.52
Thermostatic Bimetals, Low-Expansion Alloys, and Their Applications (1950), $1.00
Classified Guide to F. W. Taylor Collection (1951), $1.00
1955 Joint Conference on Combustion (1957), $12.50
Creative Engineering (1957), $1.00
Definitions of Occupational Specialties in Engineering (1952), $2.50
1956 Design Engineering Conference Proceedings, $3.50
1957 Design Engineering Conference Proceedings, $4.00
Design Data and Methods (1953), $4.00
Diesel-Fuel Oils (1948), $3.50
Directory of Consulting Engineers (1957), $2.50
Dynamics of Automatic Controls (1948), $6.00
Frequency Response (1956), $7.50
Gas Turbine Plant Heat Exchangers (1951), $3.00
General Discussion on Heat Transfer (1951), $10.00
History of the Boiler Code (1955), $5.50
Lead-Base Babbitt Bearings (1953), $1.00
Manual of Consulting Practice for Mechanical Engineers (1956), $1.50
Manual on Cutting of Metals (1952), $10.00
Engineering Tables (1956), $12.00
Metals Engineering—Design (1953), $10.00
Metals Properties (1954), $11.00
Oil and Gas Engine Power Cost Report for 1955 and previous years (1957), $3.00
Proceedings of
1955 Oil and Gas Power Division Conference, $3.00
1956 Oil and Gas Power Division Conference, $3.00
1957 Oil and Gas Power Division Conference, $3.00
Nuclear Engineering
Advances in Nuclear Engineering, 2 volumes (1957), $35.00 (no discount allowed)
Hot Laboratory Operation and Equipment (1957), $17.50 (no discount allowed)
Problems in Nuclear Engineering (1955), $17.50
Reactor Operation Problems (1955), $17.50
Past Examinations for Professional Engineers (1951–1956), $2.00
Principles of Optimalizing Control Systems (1951), $2.00
Second U. S. National Congress of Applied Mechanics Proceedings (1955), $9.00 (no discount allowed)
Properties of Steam at High Pressures (1956), $1.00
Reheat Turbines and Boilers (1952), $2.00
Recommended Practices for the Clearing of Turbine and Lubricating Systems (1952), $1.00
Recommended Practice for the Design of Turbine Lubricating Systems (1955), $1.00
Resistance of Various Materials to Cavitation Damage (1957), $3.00
Small Plant Management (1950), $7.00
Screw Thread Manual (1952), $2.50
Shock and Vibration Instrumentation (1956), $5.00
Example Sections for a Smoke Regulation Ordinance (1949), $1.00
Structures for Thermal Flight (1956), $3.00
Symposium on Water Hammer (1933 Publication, reprinted 1949), $3.00
Ten Years' Progress in Management (1942–1952), $1.50
Theoretical Steam Rate Tables (1938), $2.00
Thermal Barrier Symposium (1954), $4.00
Thermodynamic Properties of Compressed Water (1957), $2.50
Trends in Mechanical Engineering Education (1955), $2.00
Unwritten Laws of Engineering (1944), $0.50
Viscosity of Lubricants Under Pressure (1954), $5.00
Transactions (bound), in print: 1951, 1952, 1953, 1955, and 1956, $15 each ($7.50 to ASME members)

Biographies

BIOGRAPHIES issued under the sponsorship of the ASME Biography Committee are as follows:

Adventures in the Navy, in Education, Science, Engineering, and in War, by W. F. Durand, $4.00
Autobiography of an Engineer, by W. Le R. Emmet, $3.50
Autobiography of John Fritz, $3.25
Biography of Fred J. Miller, $1.00

Frank and Lillian Gilbreth, $5.50
I Remember—Autobiography of Dexter S. Kimball, $4.00
Professional Amateur—The Biography of Charles Franklin Kettering, $4.50
Scientific Blacksmith (Autobiography of Mortimer E. Cooley), $3.75

Periodicals

Mechanical Engineering (subscription price included in membership dues), $7.00 annually to nonmembers in the United States, Canada, and the Pan-American Union Countries. Elsewhere, $8.50

Transactions of the ASME, including the *Journal of Applied Mechanics*, $12.00 annually to nonmembers in the United States, Canada, and the Pan-American Union Countries. Elsewhere, $13.50

To ASME members in the United States, Canada, and the Pan-American Union Countries

$4.00 for 8 issues of *Transactions*. Elsewhere, $5.00

$2.50 for 4 issues of *Journal of Applied Mechanics*. Elsewhere, $3.00

$6.00 for both publications. Elsewhere, $7.50

Applied Mechanics Reviews

$25.00 to nonmembers and $10.00 to ASME members

Mechanical Catalog (distributed to members upon request)

Smog News (published bimonthly)

$6.00 annually. No discount allowed

ASME Miscellaneous Papers, 1956

THE papers in this list were presented at ASME meetings during 1956 but were not published in *Mechanical Engineering*, the *Transactions of the ASME*, or the *Journal of Applied Mechanics*. They can be consulted in the Engineering Societies Library where photostatic copies may be obtained and quotations will be given upon request.

A

ANDRES, R. F.
Evaporated make-up water for a monotube boiler. Paper No. 56—A-222.

ANDREW, J. D., JR.
The first commercial steam generator at supercritical pressure. Paper No. 56—S-12.

ANTONSEN, A. K.
The development of a supercharged medium speed two-cycle opposed piston engine. Paper No. 56—A-99.

APPLEBAUM, S. B., AND ZUMBRUNNEN, R. J.
Selecting water-treating processes for medium-pressure boilers. Paper No. 56—A-191.

ARATA, W. H., JR.
All-cargo aircraft requirements for efficient ground operation. Paper No. 56—A-172.

ASH, J. E.
Measurements of relative flow distributions in mixed-flow impellers. Paper No. 56—A-205.

ATTWILL, W. H., DAY, C. E., JR., AND JOHNSON, A. J.
Evaluating coal by utilization cost. Paper No. 56—A-211.

B

BAGGISH, P. F.
What do modern high-pressure boilers demand of feedwater? Paper No. 56—A-192.

BALLING, N. R., AND VAN ORNUM, V. W.
Development of a centrifugal compressor for a small gas-turbine engine. Paper No. 56—GTP-2.

BARBIER, J. E.
Engineering—tooled for action. Paper No. 56—A-76.

BARGER, J. P., ROHSENOW, W. M., AND TREADWELL, K. M.
Turboconditioning systems with vapor compression cycles. Paper No. 56—SA-7.

BAYER, LAD J.
Analysis of manufacturing costs relative to product design. Paper No. 56—SA-9.

BECKLEY, ROBERT W.
Spreader stoker firing of waste wood in a central heating plant.

BERGETHON, O. M.
Recent advances in miniature instrument bearing technology. Paper No. 56—AV-28.

BERK, A. A.
Use of the Bureau of Mines condensate-corrosion tester for the survey of return-line deterioration. Paper No. 56—A-179.

BISHOF, C. A., BROWN, J. K., AND KAHLER, H. L.
Conductivity versus sodium by flame spectrophotometer in steam purity studies. Paper No. 56—A-196.

BLACK, J. J.
Trailers in piggy-back operation from a manufacturer's point of view. Paper No. 56—A-82.

BLACKWOOD, D. E., AND SWATMAN, I. M.
Development of high-speed sleeve bearings for a solar 500-HP gas turbine engine. Paper No. 56—GTP-14.

BORGER, J. C.
Progress in the machining of integrally stiffened structures from plate.

BOULTON, B. C.
The effective use of engineers in design.

BOYD, D. M.
Dynamic response of a top temperature control system. Paper No. 56—A-158A.

BRALEY, S. A., JR.
Properties and applications of silicone rubber. Paper No. 56—SA-53.

BRAND, J. R.
Developing the creative instinct.

BROTHMAN, A.
Design and selection of motor operated valves. Paper No. 56—PET-32.

BROWN, R. J., AND SMITH, A. N.
5000-kw dual-fuel gas turbine for industrial power. Paper No. 56—F-20.

BUEHLER, J. P., AND WALSH, O. E.
Hydro-power in the Northwest. Paper No. 56—S-9.

C

CACIOPPO, A. J.
Pilot information utilization; a study in human-response dynamics. Paper No. 56—A-149.

CARAMEROS, A. H.
El Paso's gas-turbine operating experience. Paper No. 56—GTP-6.

CARLSON, P. G., RIDLAND, A. C., AND BLACKWOOD, D. E.
A 40-foot personnel boat with gas turbine propulsion—engine installation features and operating experience. Paper No. 56—A-210.

CARPENTER, S. R.
High flying Ti. Paper No. 56—S-13.

CARSON, A. B.
Design of graphite moderated power reactors.

CARTER, J. I.
Problems encountered in the manufacture and rating of air heat exchangers. Paper No. 56—PET-6.

CHRISTOFFEL, R. J.
Carbon migration in welded joints at elevated temperatures and its effect on certain mechanical properties.

CLARK, A. A., AND PIXLEY, H. J.
Effects on nonlinearities in multiloop lead angle prediction systems. Paper No. 56—IRD-18.

COMES, R. N.
High-horsepower Banbury mixing. Paper No. 56—A-195.

COMPTON, F. A., JR., AND MEITHAMER, C. D.
Electrification of oil well drilling rigs using transportation-type equipment. Paper No. 56—PET-26.

COOPER, W. E.
The significance of the tensile test to pressure vessel design. Paper No. 56—MET-6.

COUCH, V. L.
The H-bomb and industry defense. Paper No. 56—SA-3.

CRANSTON, F. W., AND IRELAND, M. G.
200,000 kw reheat boiler design for the Hydro-Electric Power Commission of Ontario—Richard Hearn Station Boiler No. 5.

CRONIN, E. W.
Penton—a new chlorine-containing polyether. Paper No. 56—A-182.

CURDO, LOUIS
Controlled gyro tumbling by means of a high-angle gimbal stop. Paper No. 56—AV-29.

D

DALZELL, R. C., AND PERRY, HARRY
Impact of atomic energy on fossil fuels. Paper No. 56—FU-7.

DARROW, D. O.
MATS inter-continental movement of supplies from the aerial ports into the zone of communications.

DAVIS, P. D., JR., AND LACY, J. W.
Modernization of airborne electronic equipment by the use of transistors. Paper No. 56—AV-7.

DEAN, L. E., AND THOMPSON, L. M.
Study of heat transfer to liquid nitrogen. Paper No. 56—SA-4.

DE LEON, A.
Job evaluation—a system of salary determination. Paper No. 56—PET-18.

DEWITT, S. H., AND BOYUM, W. B.
Internally fired semiclosed cycle gas turbine plant for naval propulsion. Paper No. 56—GTP-16.

DEXTER, R. G.
Automation for assembly. Paper No. 56—MD-2.

DICK, I. B.
The performance of the demineralizer in the preparation of high quality water.

DICKEY, P. S.
Instruments and control—key to economical performance of steam power plants. Paper No. 56—F-14.

DICKIE, H. FORD
Measurement and mechanization of production control scheduling. Paper No. 56—F-2.

DIX, E. H., JR.
Aluminum alloys for elevated temperature applications. Paper No. 56—AV-8.

DOLAN, T. J.
Significance of fatigue data in design of pressure vessels. Paper No. 56—MET-1.

D'OMBRAIN, G. L., AND RASHWEN, A.
The effect of a logarithmic element in an otherwise linear process control system. Paper No. 56—IRD-19.

DONAHUE, J. E.
Butt welding austenitic stainless steel to ferritic steel in cylindrical shapes. Paper No. 56—MET-3.

DOUMAS, M., AND HUSTE, A.
Spray dryer design calculations. Paper No. 56—A-186.

DURAN, P. J.
Ultrasonic impact grinding. Paper No. 56—SA-47.

DURKIN, W. J., AND GOLDBERG, D. C.
Effect of supersonic flight on jet engine design.

DUSSOURD, J. L., AND SHAPIRO, A. H.
A deceleration probe for measuring stagnation pressure and velocity of a particle-laden gas stream.

DWYER, H. L., AND PAYNE, C. A.
An industrial plant installation of a gas turbine to generate power and process steam. Paper No. 56—F-21.

E

EASTMAN, S. E.
The value of airlift in defensive, local, or peripheral wars after 1960.

ECKERT, E. R. G., AND IRVINE, T. F.
Selection of optimum configurations for a heat exchanger with one dominating film resistance. Paper No. 56—S-20.

EMMERT, R. J.
Effective use of engineering skill in manufacturing.

ESKRIDGE, W. A.
A comparison of the application of various fluid drives to oilfield drilling rigs.

EZEKIEL, F. D.
Effect of an end chamber on the surge frequency in a hydraulic conduit. Paper No. 56—A-158D.

F

FARBER, ERICH A., AND GLICKSTEIN, M. R.
Effects of junction manufacture on the thermocouple EMF generation. Paper No. 56—A-135.

FAULDERS, C. R.
Aerodynamic design of vaned diffusers for centrifugal compressors. Paper No. 56—A-213.

FAUS, H. W.
The effect of improved draft gears and spring dampened trucks on freight car shocks. Paper No. 56—A-80.

FENG, TSUN-YING
Characteristics of unevenly underlapped four-way hydraulic servo valves. Paper No. 56—A-140.

FENNEMA, T. S.
Practical economics for refinery mechanical engineers. Paper No. 56—PET-7.

FISHER, I. M.
Discussion of dust suppression in coal handling. Paper No. 56—A-212.

FLYNN, GREGORY, JR., AND UNDERWOOD, A. F.
A million pound high-speed dynamic fatigue test machine. Paper No. 56—A-145.

FOWDEN, W. M. M., JR., AND SAWYER, J. W.
33,000 hours on marine gas turbines in naval service. Paper No. 56—GTP-7.

FREEMAN, J. W., AND ROHRIG, I. A.
Influence of heat treatment of the 1000 F and 1050 F properties of steam pipe made in Japan and Germany from 1.25 Cr-0.50 Mo and 2.25 Cr-1.0 Mo steels.

FREESE, C. E.
Mechanical design problems connected with ammonia synthesis. Paper No. 56—PET-1.

G

GALLOWAY, D. F.
Production engineering research and its practical application in Britain.

GEORGE, H. H., RODABAUGH, E. C., AND HOLT, M.
Performance of 6061-T6 aluminum flanged-pipe assemblies under hydrostatic pressure. Paper No. 56—PET-19.

GERBER, L.
Standards for filing engineering drawings. Paper No. 56—A-93.

GITZENDANNER, L. G.
Teaching machine design for modern industry. Paper No. 56—SA-67.

GRAVES, G. L., JR.
Design considerations for naval gas turbines. Paper No. 56—GTP-1.

GREGORY, A. T., AND KING, J. A.
The evolution of a small turbojet. Paper No. 56—A-203.

H

HALBERG, M. N.
Calculating the size of flywheel required for a synchronous motor driven reciprocating compressor. Paper No. 56—F-18.

HALL, K. W., AND ALVORD, H. H.
Load carrying capacity for spur-gear teeth hob cut from molded du Pont "Zytel" 101. Paper No. 56—SA-43.

HALLIDAY, JOHN
Boiler vibration caused by combustion gas flow. Paper No. 56—A-216.

HAMMOND, W. E., AND EVANS, T. C.
Gas-turbine rotary regenerator—design and development of prototype unit for 3000-hp plant. Paper No. 56—GTP-5.

HARDER, K. C.
Engineers study administration. Paper No. 56—A-96.

HARRIS, T. J.
Airfreight sales development. Paper No. 56—A-173.

HARRIS, T. J.
Airfreight's iron curtain.

HATCH, T. F.
The human factor in machine design. Paper No. 56—A-46.

HATSOPOULOS, G. N., AND KAYE, J.
A novel method of obtaining an isothermal surface for steady-state and transient conditions. Paper No. 56—SA-13.

HAYES, E. J.
Viscous damper design refinements for servomechanisms. Paper No. 56—SA-40.

HEATH, F. R.
Designing jet engines with a medium-size digital computer. Paper No. 56—A-143.

HEFNER, B. F.
Application of diesel-electric traction power to oil well drilling. Paper No. 56—PET-25.

HEINTZ, R. P.
Minimizing undesirable oscillations in certain two-state electrohydraulic control valves. Paper No. 56—A-158C.

HEINTZ, R. P.
A new maximum power criterion for certain hydraulic control valves. Paper No. 56—A-158B.

HELLER, J. J.
Basis for the design and retirement of petroleum heater tubes.

HELVERSEN, F. D.
Outstanding material-handling practices in the pulp and paper industry on the West Coast. Paper No. 56—S-1.

HEMEON, J. R.
Hydraulic accumulator applications. Paper No. 56—SA-59.

HENNIG, F. O.
Gas turbine for mobile power unit. Paper No. 56—GTP-10.

HILL, A. M., AND ZILM, F. W.
Maintenance welding high-test line pipe. Paper No. 56—PET-15.

HILST, G. R., AND FUQUAY, J. J.
Meteorological factors in site selection.

HOLBROOK, G. E.
Development of the Allison turbo-prop engine. Paper No. 56—GTP-17.

HOLDEN, O., AND PEMBERTON-PIGOTT, P.
Mechanical design features of the St. Lawrence Power Project. Paper No. 56—CAN-1.

HOUGH, F. A., AND BELL, JAMES F.
Natural gas for the Pacific Northwest.

HOWELL, J. D.
The geometry of belt and chain drives. Paper No. 56—SA-41.

HUANG, T. C.
Residual stresses in cylindrical specimens.

HUFFMAN, J. R.
The materials testing reactor operating characteristics and experimental testing.

HUGHES, J. V., AND SHARP, J. M.
The design and operation of an electrical analog of a reciprocating compressor installation. Paper No. 56—A-200

HUPPERT, M. C., AND COSTILOW, E. L.
Some aspects of rotating stall in single-stage compressors. Paper No. 56—SA-57.

HUR, J. J., DEICHLER, J. K., AND WORRELL, G. R.
Selection of materials for construction of catalytic reforming units. Paper No. 56—PET-8.

I

INGLEY, F. L., AND MEEKS, P. J.
High impact plastics as engineering materials.

J

JENKINSON, J. R.
Low-temperature deposits and corrosion in boilers. Paper No. 56—A-184.

JIMBO, HISAO
Investigation of the interaction of windage and leakage phenomena in a centrifugal compressor. Paper No. 56—A-47.

JOHNSON, A. PEMBERTON
The selection of technical managers. Paper No. 56—SA-10.

JOHNSON, G. DUGAN
The Kaplan turbine in Canada. Paper No. 56—CAN-2.

JOHNSON, J. W.
Lateral tests on full-scale lumber and plywood-sheathed roof diaphragms. Paper No. 56—S-16.

JOHNSON, L. G.
The use of high-speed computers in the design and appraisal of helical gears. Paper No. 56—A-142.

JONES, R. VERNON, AND BOEKE, PAUL J.
Properties and applications of MARLEX 50 ethylene polymer.

K

KARAM, H. J.
Polymer properties involved in process equipment design. Paper No. 56—A-175.

KELLER, G. R.
High temperature aircraft hydraulics. Paper No. 56—AV-5.

KELLY, D. V.
The new American standard for surface roughness, waviness, and lay, ASA B46.1-1955. Paper No. 56—SA-48.

KEMMERER, H. R.
Effective utilization of engineering manpower in research.

KETCHUM, V.
Glued laminated timber construction. Paper No. 56—S-15.

KING, T. H., AND BROWN, D. D., JR.
Problems encountered in the selection and use of air-cooled, heat-transfer equipment. Paper No. 56—PET-12.

KNAPP, CARL
The carrier method of handling as applied in the steel industry. Paper No. 56—S-6.

KNAUSS, A. C.
Kilns for drying lumber—some aspects of design.

KOENIGSBERGER, F., AND GHABRIAL, S. R.
Impact stresses in drop hammer guides. Paper No. 56—A-12.

KOHLER, W. H.
Development of hydraulic operation for gates and valves. Paper No. 56—F-8.

KREITH, F., AND TAYLOR, J. H., JR.
Heat transfer from a rotating disk in turbulent flow. Paper No. 56—A-146.

KRESS, R.
A new solar gas turbine driven auxiliary power plant. Paper No. 56—GTP-8.

KRESS, R.
A pod-mounted gas-turbine-driven auxiliary power unit. Paper No. 56—S-10.

KROESCHELL, T. R.
The development of the heat pump and its application in the Chicago area.

L

LAFAVE, V. A.
Design applications for air drilling equipment.

LAMB, BAYNE
Modern material handling as employed by Boeing Airplane Company, Seattle Division. Paper No. 56—S-5.

LATTIN, L. E.
The art of applying science. Paper No. 56—MGT-3.

LEMAY, R. C.
Processes and product improvements to be anticipated with natural gas. Paper No. 56—S-14.

LEONARD, A. S.
A preliminary analysis of a turning jet. Paper No. 56—F-19.

LEUENBERGER, H., AND PERSON, R. A.
Compilation of radiation shape factors for cylindrical assemblies. Paper No. 56—A-144.

LIN, D. J. L., AND HANSSEN, A. J.
The application limits and accuracies of control valve flow coefficient, CV. Paper No. 56—IRD-22.

LITZSINGER, H. S., AND HATTON, R. E.
The technical appraisal of the performance of OS-45 and/or OS-45-1 high temperature hydraulic fluids. Paper No. 56—AV-21.

LOBINGIER, GEORGE D.
The training stage after graduation.

LOCHIANO, R.
Remote-controlled, engine-driven, centrifugal, gas-compressor station. Paper No. 56—PET-22.

LOWRY, R. K., AND BOARDMAN, W. P.
Supersonic ramjet controls and the therma barrier.

LUCKS, C. F., AND DEEM, H. W.
Apparatus for measuring the thermal conductivity of liquids at elevated temperatures: thermal conductivity of fused NaOH to 600 C. Paper No. 56—SA-31.

LYLE, J. E.
Cold-weather pipe lining. Paper No. 56—PET-17.

LYON, F. H., AND GROVER, H. J.
Some suggestions for research in diaphragm technology. Paper No. 56—A-221.

LYONS, L. J.
High temperature problems of airborne electrical equipment. Paper No. 56—AV-25.

M

MACALUSO, C. A.
An automatic, spray desuperheating, closed system for testing compressors. Paper No. 56—A-153.

MACAULEY, R. W., AND GARDINER, C. M.
Increased life for gas turbine combustion systems burning residual fuel. Paper No. 56—GTP-11.

MCCAFFREE, K. M.
An economic appraisal of nuclear versus hydro power development in the Pacific Northwest. Paper No. 56—S-19.

MCCALLEY, R. B., JR., AND KELLY, R. G.
Tables of functions for short cylindrical shells. Paper No. 56—F-5.

MCCLELLAN, L. N.
Engineering management in reclamation. Paper No. 56—F-17.

MCCORMICK, H. J.
Handling by dragline—the workhorse of industry. Paper No. 56—SA-38.

MACFARLANE, W. A.
Industrial fuel utilization in the United Kingdom. Paper No. 56—FU-3.

MCINTOSH, G. B., JR.
Semiautomatic, gas-engine-driven, centrifugal, gas-compressor station. Paper No. 56—PET-28.

MCKINLEY, D. C.
Experience with positive displacement meters in oil pipe service. Paper No. 56—PET-20.

MCLENEGAN, D. W.
Professional development—the importance of early planning.

MALLERY, GUY, JR.
The large water-based transport and its military uses. Paper No. 56—AV-26.

MARTIN, R. W., JR.
Wood refuse spreader stoker firing of two steam generators. Paper No. 56—S-21.

MARTS, F. B.
Remote control and operation of booster stations on the Platte pipeline system. Paper No. 56—PET-14.

MATER, MILTON H.
Power requirements for sawing redwood cants with seven-foot diameter bandmill.

MAULL, W. W., AND MCMAHON, E. C.
Fly-ash refiring. Paper No. 56—FU-1.

MEDEIROS, A. A., AND CONGER, C. C.
Facilities and instrumentation for compressor and turbine research at the NACA Lewis Flight Propulsion Laboratory. Paper No. 56—SA-65.

MELDRAM, C. W.
Materials handling—equipment and techniques for loading and unloading all-cargo aircraft. Paper No. 56—A-197.

MELVIN, RICHARD H.
Evolution of the iron hand.

MENDELSON, A., AND MANSON, S. S.
Practical solution of plastic deformation problems in the elastic-plastic range. Paper No. 56—A-202.

MICHAELS, ABRAHAM
Design criteria for municipal incinerators—the customer's view. Paper No. 56—SA-60.

MILES, J. C., PARKER, N. A., AND SMOOT, R. L.
Rotary regenerator for gas turbines. Paper No. 56—GTP-9.

MILES, T. R.
Barking slabs and logs in the Northwest.

MORSE, K. M.
Factors in exhaust ventilation system design for the safety engineer. Paper No. 56—SA-64.

MOYLE, M. P., ET AL.
Development and evaluation of an icing indicator. Paper No. 56—AV-1.

MURPHY, J. H., SODERBERG, C. R., JR., AND ROSSHEIM, D. B.
Considerations affecting future pressure vessel codes. Paper No. 56—MET-4.

N

NADDOR, E.
Economic lot sizes for some elementary inventory systems.

NELSON, H. W., AND PILCHER, J. M.
Ignitibility testing as a measure of the burning characteristics of solid fuels. Paper No. 56—FU-2.

NEWELL, FLOYD B.
Diaphragm characteristics. Paper No. 56—A-220.

NEWTON, J. A., AND BRAID, M. D.
Production surfacing of aluminized engine valves. Paper No. 56—SA-35.

NIPPES, E. F., ET AL.
Time-temperature effect on properties of weld heat affected zone in type 347 stainless steel. Paper No. 56—MET-5.

NYE, D. D., JR., AND PARADISE, R. Y.
An analytical study of linearized industrial process controllers. Paper No. 56—IRD-23.

O

OUTWATER, J. OGDEN
The fundamental mechanics of reinforced plastics. Paper No. 56—A-201.

P

PARKER, F. C.
Are standards or codes practical for ultrasonic examinations of metals and weldments? Paper No. 56—A-185.

PASEK, R. L., AND LUNDBERG, R. M.
Determination of heat content of coal by regression analysis. Paper No. 56—FU-4.

PELOUBET, E. M.
Aluminizing aspects of fabricated pipe and piping components. Paper No. 56—PET-35.

PENGELLEY, C. D.
Frequency of a preloaded system. Paper No. 56—A-158E.

PENNELS, N. E.
CO boiler pays off in fuel savings and produces zero CO. Paper No. 56—A-198.

PENROD, E. B., AND PRIVON, G. T.
Transient heat flow determination of the thermal properties of clay. Paper No. 56—A-91.

PHILLIPS, NORMAN D.
Progress report—ignibility of solid fuels and burning rates of fixed carbon. Paper No. 56—FU-5.

PIPPENGER, J. J.
The effects of back pressure on hydraulic oil-control valves. Paper No. 56—A-148.

POPE, S. H.
Lease automatic custody transfer. Paper No. 56—PET-33.

PUZAK, P. P., AND PELLINI, W. S.
Evaluation of the significance of Charpy Test for quenched and tempered steels. Paper No. 56—MET-2.

R

RADCLIFFE, B. M.
The design of timber roof truss with nail-glued connections. Paper No. 56—A-180.

RAMSEY, R. P., AND SOO, S. L.
A new concept in engine gas-generator-turbine plant. Paper No. 56—A-204.

REDDING, H. D.
Practical aspects of using diesel-electric railway equipment on drilling rigs. Paper No. 56—PET-29.

REINEKING, W. H.
Human problems in the development of the F-102 cockpit. Paper No. 56—AV-2.

RESWICK, J. B., AND ROBERTS, J. E.
A new method for analog correlation. Paper No. 56—A-158F.

REYNOLDS, R. V.
Tungsten carbide tools for woodworking industries.

RITCHEY, J. E.
Engineering as a function of management. Paper No. 56—A-65.

RIZIKA, J. W.
The thermal problems of high-speed flight and the central electric aircraft cooling program. Paper No. 56—SA-24.

ROSS, J. E.
A program for controlling construction costs. Paper No. 56—PET-10.

RUPP, H. H., AND HORNBERGER, W. N.
Portable 5000-kw railway and skid-mounted gas-turbine power plants. Paper No. 56—S-7.

RUSZCZAK, R.
Machine-tool automation and feedback. Paper No. 56—MD-3.

S

SAWARAGI, Y., AND TAKAHASHI, S.
Spectral response of control system containing zero-memory nonlinearity to random inputs. Paper No. 56—IRD-15.

SCHELP, H. R.
The versatile gas turbine. Paper No. 56—S-11.

SCHMIDT, A. O., ET AL.
Ceramic and carbide tool performance tests—part I. Paper No. 56—A-218.

SCHUBERT, D. E., AND NELSON, N. E.
Particle board manufacture (mechanization).

SCHUELER, L. B.
Boiler cleaning—methods and controls. Paper No. 56—F-13.

SEANOR, R. C.
Roll bending applied to rubber and plastic calenders. Paper No. 56—A-176.

SEEBE, N. B.
Accuracy requirements of Graflex 70-mm combat focusing system. Paper No. 56—A-147.

SHERBROOKE, W. A., AND MONROE, H., JR.
Air and gas duct system for the gas-turbine vessel John Sergeant. Paper No. 56—A-207.

SHOEMAKER, R. C.
The design of over-hanging attachments for crawler tractors. Paper No. 56—S-2.

SKAFF, P. S.
The maintenance challenge in a petrochemicals plant. Paper No. 56—PET-2.

SKINNER, J. B.
Toxicity of materials of interest to the mechanical engineer. Paper No. 56—A 56.

SMITH, GEORGE V.
Chromium-molybdenum and chromium-molybdenum-vanadium steels for power plant and refinery service up to 1100F; an appraisal of the literature. Paper No. 56—A-214.

SMITH, V.
Steps toward more creative production engineering. Paper No. 56—SA-49.

SOLNICK, R. L.
Apparatus for sampling particulate matter in high-pressure gas streams. Paper No. 56—PET-16.

SOMERS, J. C.
Materials handling in product finishing. Paper No. 56—A-150.

SPEER, PAUL
Materials handling of bulk materials in the meat-packing industry. Paper No. 56—A-193.

STEIDEL, R. F., JR.
Building a professional future.

STEVENS, L. R., JR.
A systematic study of air cycles for aircraft cooling applications. Paper No. 56—SA-11.

STYS, Z. STANLEY
6200-kw gas-turbine-driven mobile power plant. Paper No. 56—GTP-4.

SWEENEY, J. C.
Gearbox layout (logarithmic spiral). Paper No. 56—A-158G.

T

TEITELBAUM, P. D.
Trends and prospects in the coal industry.

THOMPSON, B. J.
Hydraulic drives using rich-oil power units. Paper No. 56—PET-9.

THOMPSON, N. D.
Handling timber with the fork-lift truck and material carrier. Paper No. 56—S-4.

TODD, DONALD J.
The J69 engine—two applications of a small turbojet. Paper No. 56—SA-62.

TOPPING, A. D.
On porosity and rock strength. Paper No. 56—PET-27.

TROTTER, CLAUD H.
Maintenance organization factors in the modern refinery. Paper No. 56—PET-5.

TRUE, R. W.
Drilling rig maintenance costs.

TUCKER, J. T., JR., AND EBERLE, F.
Development of a ferritic-austenitic weld joint for steam plant application.

U

ULLMANN, J. E.
Cost criteria of design change in industrial products. Paper No. 56—SA-42.

V

VALENTINE, PHILIP J., AND FRENCH, EDWARD P.
Measuring ramjet tailpipe temperatures. Paper No. 56—AV-30.

VAN DYKE, J. C.
Recent developments in engineered timber construction. Paper No. 56—A-136.

VAN WINKLE, J.
A survey of possible refrigerants for high-temperature application. Paper No. 56—SA-12.

VAZSONYI, A.
Economic lot size formulas in manufacturing.

W

WAYNE, S. S.
The effect of heavy rainstorms on the J47 turbojet operation. Paper No. 56—A-151.

WEBB, P.
Ventilated clothing as a protection against heat exposure. Paper No. 56—AV-4.

WEILER, R. E.
Performance and design considerations for turbojet engines operating in the thermal barrier region.

WELANETZ, L. F.
Graphical versus computer techniques—for mechanism analysis. Paper No. 56—A-48.

WILDMANN, M.
Experiments on gas lubricated journal bearings. Paper No. 56—LUB-8.

WILEY, J. R.
Air cargo terminal design and location. Paper No. 56—A-174.

WILLIAMS, A. H.
A stabilized platform to mount on a nonrigid airship base. Paper No. 56—AV-27.

WINN, R. L.
Airlift within A. M. C.

WOLFSON, M. K.
Experience with water-alcohol injection on the J47 engine. Paper No. 56—A-152.

WOOD, H. C., TAYLOR, J. R., AND BOURKE, R. J.
Weather aging of colored styrene plastics.

WOODSON, R. D.
The engineer in a professional status.

WOOLF, J. R., AND SCOTT, L. R.
Influence of through metal on heat transfer through aircraft-structural-sandwich panels. Paper No. 56—SA-23.

WYATT, HARRY M., JR.
Pulsation absorbers—their design and application. Paper No. 56—PET-31.

WYLIE, R. D., AND CARPENTER, O. R.
Some considerations in the welding of austenitic chromium-nickel stainless steels.

Z

ZWICKY, E. E., JR.
The use of digital computers in the mechanical design of large steam turbines. Paper No. 56—A-139.

Index to Mechanical Engineering

Volume 79, January—December, 1957

(A) denotes Abstract; (AC) Author's Closure; (BR) Book Reviews; (C) Correspondence; (D) Discussion; (Ed) Editorial

A

ABLOW, C. M.
Transient air temperatures in a duct (A) 186

ABRAHAM, B. M.
UO_2–NaK slurry studies in loops at 600 C (A) 472

ABRAMSON, H. NORMAN
Study of the propagation of flexural waves in elastic beams (A) 886

ABRASIVES
"Borazon," a diamond-hard abrasive (A) 357

ABSORPTIVITY. *See* RADIATION

ACCELERATORS. *See* ATOMIC ENERGY

ACOSTA, A. J.
Experimental study of centrifugal-pump impellers (A) 186

ADAMS, COMFORT A.
Awarded Edison Medal 107, 416

ADAMS, DOUGLAS P.
Abacs or nomograms (BR) 99
Alignment diagrams from network charts by graphics (AC) 494

ADAMSON, G. M.
Stress-corrosion cracking problems in the homogeneous reactor test (A) 476

ADHESIVES. *See also* CEMENTED JOINTS
Bonding plastic to rubber and metals (A) 1050

ADKINS, H.
Practical aspects of relay or pulse servomechanisms (A) 585

ADMINISTRATION. *See* MANAGEMENT

AEBERSOLD, A. F.
Pipeline steels—a review of the industry 448

AERODYNAMICS
New approach to the theory of thin, slight cambered profiles (A) 381
Stall propagation in a cascade of airfoils (A) 968

AINSWORTH, CYRIL
Safety standards 138

AIR CONDITIONING
Gas-motor air conditioning 454

AIR DRILLING. *See* PETROLEUM-WELL EQUIPMENT

AIR HEATERS
Air preheater improves combustion (A) .. 668
In-service washing of Ljungstrom air preheaters on pulverized-coal-fired steam generators (A) 380

AIR LUBRICATION. *See* BEARINGS

AIR POLLUTION
Air pollution controlled (A) 465
Air pollution handbook (BR) 783
ASME to participate in Air Pollution Control Association celebration 517
Characteristics of air-borne particles (A) 967
"Determining dust concentration in a gas stream" is revision of original ASME Power Test Code section 1190
Dust and fume control 1022
Dust near steam power stations (A) 470
Encyclopedia of instrumentation for industrial hygiene (BR) 783
Studies on air-pollution control by Southern California Edison Company (A) 773

AIR TRANSPORT
Airfreight sales development (A) 384
All cargo aircraft requirements for efficient ground operation (A) 282
Jet air freighter (A) 953
Maintenance of airline engines 1123
Materials handling–equipment and techniques for loading and unloading all-cargo aircraft (A) 384

AIRPLANE ENGINES
Automation and new methods for overhaul (A) 680
Cleaning methods used in the overhaul of aircraft gas-turbine power plants (A) 680

ISSUE	PAGE NUMBERS
January	1– 128
February	129– 220
March	221– 328
April	329– 424
May	425– 532
June	533– 628
July	629– 716
August	717– 828
September	829– 916
October	917–1012
November	1013–1108
December	1107–1216

AIRPLANE ENGINES (*continued*)
Designing jet engines with a medium-size digital computer (A) 383
Effect of heavy rainstorms of J47 turbojet operation (A) 282
Evolution of a small turbojet (A) 283
Experience with water-alcohol injection on the J47 engine (A) 384
Maintenance of airline engines 1123
Mechanical approach to simplified jet-engine maintenance (A) 680

AIRPLANE FUEL SYSTEMS
Dynamic-versus-static fuel-control testing a controversy at Vickers hydraulic symposium 1199

AIRPLANE HYDRAULIC SYSTEMS
Dynamic-versus-static fuel-control testing a controversy at Vickers hydraulics symposium 1199
Vickers Transport Aircraft Hydraulic Conference 111

AIRPLANE INSTRUMENTS
Measurement and integration of acceleration in inertial navigation (A) 384

AIRPLANE LANDING GEARS
Fresh approach to aircraft landing-gear design (A) 679

AIRPLANE MANUFACTURE
Aircraft production criticized (A) 281

AIRPLANE REFUELING UNITS
Approach to simplification of aerial refueling hose-reel units (A) 681

AIRPLANES. *See also* AIR TRANSPORT, HIGH-TEMPERATURE RESEARCH, WIND-SHIELDS
Arnold Engineering Development Center 8
Boron fuels for transonic aircraft and missiles (A) 1047
Designing equipment for reliability 1142
The hot airplane 925
Metallic material engineering and manufacturing aspects of new high-speed aircraft (A) 681
Nuclear weapons engineering (A) 768
Pilot information utilization: a study in human response dynamics (A) 486
Skid-warning "foot thumper" (A) 1049

AIRPORTS
Air-cargo-terminal design and location (A) 384

ALDAG, ROBERT
Dual-powered high-speed locomotive .341, 1074

ALDEN, JOHN DOUGLAS
Obituary 126

ALIGNMENT DIAGRAMS. *See* GRAPHICAL METHODS

ALLARDT, ERNST W.
Biography 813
Nominated for Regional Vice-President 813

ALLOYS. *See also* MAGNETISM, NONFERROUS ALLOYS, STEEL ALLOYS
Cast alloy with 140,000-psi tensile strength (A) 361
Columbian (niobium) alloys (A) 360

ALUMINUM. *See also* RAILROAD CARS, ROLLING MILLS
Alumina from clay (A) 36
Roller-hearth furnace for heat-treating large aluminum-alloy extrusions (A) .. 359

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS
Cosponsors IRD conference program 312

AMERICAN INSTITUTE OF CONSULTING ENGINEERS
Annual dinner, 1956 101

AMERICAN INSTITUTE OF MINING, METALLURGICAL, AND PETROLEUM ENGINEERS
Joint Fuels Conference with ASME..899, 1196

AMERICAN POWER CONFERENCE
1957 program shows ASME in large role . 311

AMERICAN ROCKET SOCIETY
Annual meeting, 1956 102

AMERICAN SOCIETY OF LUBRICATION ENGINEERS
ASME-ASLE Lubrication Conference, Toronto, 1957 1091

AMERICAN SOCIETY OF MECHANICAL ENGINEERS
Activities: 1956—Then what?—Suggestions for future ASME activities 4
Applied Mechanics Division Conference, Berkeley, 1957 ..... 515, 816
Joins in ASA mechanical shock and vibration program 1198
Budget policies, 1957–1958 908
Codes and Standards Workshop. *See also subject of code* 213, 320, 415, 525, 621, 708, 819, 907, 1000, 1090, 1200
Committees
National Junior Committee
Biographical sketches of 1957 members 1002
Meeting in Springfield, Vt. 1002
1958 Nominating Committee organizes 821
Reactor hazards code committee organized 321
Regional administrative committee meetings 809
Council
Actions 820, 1208
Activities in 1955–1956 55
Executive Committee actions 214, 321, 417, 526, 622, 1101, 1102, 1210
Fellows elected 619
Finance report for 1955–1956 64
Fuels Division; Joint Solid Fuels Conference with AIME 899, 1196
Gas Turbine Power Division conference, 1957 ..... 209, 518
IRD conference, 1957 ..... 312, 610
Instruments and Regulator Division
IRD Joins AIEE and IRE in meeting on computers in control 903
Junior forum 117, 211, 316, 414, 524, 620, 710, 817, 908, 1002, 1093, 1202
Lecturers, 1955–1956 74
Lubrication Division; ASME-ASLE Lubrication Conference, 1957 ..... 900, 1091
Machine Design Division Conference, 1957 ..... 313, 516, 704
Management Division
Conference 210
Engineering Management Conference, Pittsburgh, 1957 521
West Coast Engineering Management Conference 517
Meetings
ASME-AIChE Heat Transfer Conference, 1957 996
ASME-SAM Management Conference 410
Annual Meeting (Ed) 1015
Annual Meeting, 1956 75
Annual Meeting, 1957 ..... 987, 1083
Calendar of meetings . 115, 208, 319, 413, 517, 616, 810, 901, 1001, 1100, 1200
Design Engineering Conference, 1957 . 412
Fall Meeting, Hartford, 1957 .703, 792, 1086
Maintenance and Plant Engineering Group holds first meeting 416
Management Engineering Conference, 1957 617
Petroleum Division Conference, Tulsa, 1957 794
Power Conference, Allentown, 1957 ... 902
Railroad Division Conference, 1957 ... 614

ASME (*continued*)
Region I holds management conference ... 618
Regional conference on management, West Boylston, Mass ... 397
Semi-Annual Meeting, San Francisco, 1957 ... 408, 511, 798
Spring Meeting, Birmingham, 1957 ... 305, 606
Technology Executives Conference, 1957 ... 308
Textile Engineering Division Conference, 1957 ... 612
Members
Fellows elected ... 1205
Membership
Candidates ... 124, 216, 324, 420, 528, 624, 711, 824, 912, 1008,1104 1212
News ... 114, 207, 305, 408, 511, 606, 696, 792, 899, 987, 1083, 1192
Obituaries ... 126, 218, 326, 422, 530, 626, 714, 826, 914, 1010, 1106, 1214
Officers
Nominations for 1957–1958 ... 805, 811
Nominations open for 1959 ... 1207
Oil and Gas Power Division Conference, 1957 ... 411
Petroleum Division Conference, Tulsa, 1957 ... 1094
Power Division Conference, Allentown, 1957 ... 1192
Publications
ASME handbook, "Engineering Tables," selected as one of the 100 best technical books of 1956 ... 609
Availability list of
ASLE-ASME Lubrication papers, 1957 ... 1092
ASME-AIChE Heat Transfer Conference papers, 1957 ... 999
ASME-AIME Joint Fuels Conference papers, 1957 ... 1198
ASME-EIC petroleum papers, 1957 ... 788
ASME Power Conference papers, 1957 ... 1194
Annual Meeting papers, 1956 ... 95
Applied Mechanics Conference papers, 1957 ... 780
Engineering management papers ... 523
Fall Meeting papers, 1957 ... 1088
Gas turbine power papers ... 520
Instruments and Regulators Conference papers, 1957 ... 612
Nuclear Congress papers, 1957 ... 488
Oil and Gas Conference papers, 1957 ... 702
Petroleum Mechanical Engineering papers, 1957 ... 1099
Railroad Conference papers, 1957 ... 616
Semi-Annual Meeting papers, 1957 ... 778
Spring Meeting papers, 1957 ... 609
Unpublished ASME papers ... 192, 1072
Wood Industries Conference papers, 1957 ... 707
Meetings deadline dates (Ed) ... 427
Mechanical Catalog, 1958 ... 1001
Nuclear glossary, 1957 edition published ... 415
Railroad Division Conference, 1957 ... 211, 314
Sections
Anthracite-Lehigh Valley Section is host to National Power Conference ... 698, 1192
Birmingham Section host to 1957 Spring Meeting ... 305
Mid-Continent Section cosponsors Petroleum Conference ... 1094
Southern California Section cosponsors intersociety management banquet ... 116
Wilmington Section host to three-day instruments conference ... 1195
Standards. *See* ASME Codes and Standards Workshop
Student Branches
Planning a student section meeting on industrial indoctrination ... 211
Regional Conferences demonstrate ASME activities and promote professional development ... 1004
Regional Student Conference winners, 1957 ... 1004
Regional Student Conferences, 1957 ... 318
Technical digest of ASME papers ... 46, 184, 282, 374, 472, 580, 674, 768, 878, 960, 1060, 1160
Textile Engineering Division Conference, 1957 ... 315
Woman's Auxiliary
Annual meeting, 1956 ... 119
Report on scholarship funds ... 906
Wood Industries Conference, 1957 ... 318, 410, 706

AMPLIFIERS. *See* AUTOMATIC CONTROL

ANALOGY. *See* COMPUTERS, ELECTRIC ANALOGY

ANALYSIS. *See* AUTOMATIC CONTROL, CHEMICAL ANALYSIS, COAL, ELECTRIC ANALOGY, ENGINE ANALYZERS, MATHEMATICS, SERVOMECHANISMS, STATISTICAL METHODS, STEEL ALLOYS

ANDERSON, G. C.
Plastic pipe in the petroleum industry (A) ... 1065

ANDERSON, JOHN F.
Enrico Fermi fast-breeder reactor (cond.) ... 240

ANDERSON, W. F.
Heat-transfer considerations in the use of organic reactor coolants (A) ... 473

ANDERSON, W. J.
On friction and lubrication at temperatures to 1000 F with particular reference to graphite (A) ... 1165

ANDRES, R. F.
Evaporated make-up water for a monotube boiler (A) ... 484

ANSHEN MELVIN
Development of engineering managers through planned education and training ... 741

ANTIFRICTION BEARINGS
Current development problems in high-temperature aircraft roller bearings (A) ... 1164
How Timken research, engineering, and management developed and built its mechanized roller bearing plant ... 981
"Roller freight" needs better trucks (A) ... 675

ANTONSEN, A. K.
Development of a supercharged medium speed two-cycle opposed-piston engine (A) ... 282

APITZ, C. R.
Economic aspects of combustion gas turbine application in the refining industry (A) ... 1066

APPL, F. C.
On the theoretical analysis of a dynamic thermocouple (A) ... 291

APPLEBAUM, S. B.
Selecting water-treating processes for medium-pressure boilers (A) ... 481

APPLIED MECHANICS
Dislocation over a bounded plane area in an infinite solid (A) ... 589
Third U. S. National Congress of Applied Mechanics announced for June, 1958 ... 694
Trifilar pendulum and its application to the experimental determination of moments of inertia (A) ... 969

ARATA, W. H., JR.
All cargo aircraft requirements for efficient ground operation (A) ... 282

ARCHER, ARTHUR ALBERT
Obituary ... 826

ARMITAGE, JOSEPH BRADLEY
Obituary ... 914

ARMS, J. H. R.
Retires as secretary–general manager of United Engineering Trustees, Inc ... 206

ARNOLD, CHRISTIAN K.
Technical ghostwriting ... 348, 975

ARNOLD, E. D.
Decay and storage of irradiated fuel (A) ... 475

ARNOLD, J. NORMAN
Alignment diagrams (D) ... 492

ARPACI, V. S.
Dynamic response of heat exchangers having internal heat sources ... Part I(A) 880, Part II(A) 963

ARTSAY, NICHOLAS CONSTANTINE
Obituary ... 218

ASH, J. E.
Measurements of relative flow distribution in mixed-flow impellers (A) ... 283

ASHMEAD, RICHARD ROBERT
Obituary ... 1214

ASSEMBLY LINES. *See* MANUFACTURING

ATKINSON, C. P.
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer (A) ... 970

ATOMIC ENERGY. *See also* HIGH-TEMPERATURE RESEARCH, POWER, POWER PLANTS—NUCLEAR, RADIOGRAPHIC INSPECTION
ASME joins other societies planning 1957 nuclear congress ... 114
"Atomic energy applications with reference to underdeveloped countries"; an AEC survey ... 604
AEC announces, first *Unclassified Engineering Materials List* ... 311

ATOMIC-ENERGY (*continued*)
AEC radiation safety report published ... 604
Atomic energy report (A) ... 947
Atomic power in the U.K. (A) ... 183
Catalyzed nuclear reaction (A) ... 270
Fellowships in nuclear-energy technology available ... 103
Geneva Conference on Peaceful Uses of Atomic Energy; papers invited for second conference ... 1195
"Glossary of terms in nuclear science and technology" announced ... 1194
Heavy ion linear accelerator (A) ... 759
Impact of atomic energy on fossil fuels (A) ... 54
Nuclear briefs (A) ... 668, 763, 946, 1055
Nuclear Congress, 1957 ... 501
Nuclear Congress and unity (Ed) ... 131
Nuclear energy standards are ISO topic in Geneva ... 897
Process engineering problems in the Hanford separation plants ... 634
Reasons for establishing Euratom ... 558
Two new nuclear particles? (A) ... 463
Young talent needed in atomic power field (A) ... 396

ATSUMI, A.
Stress concentrations in a strip under tension and containing two pairs of semicircular notches placed on the edges symmetrically (A) ... 885

ATTWILL, W. H.
Evaluating coal by utilization cost (A) ... 383

AURAND, HENRY S.
Biography ... 813
Nominated for Regional Vice-President ... 813

AUSMAN, J. S.
Fluid dynamic theory of gas-lubricated bearings (A) ... 52

AUSTRALIA
Australia and the challenge of change (BR) ... 1175

AUTOMATIC CONTROL. *See also* COMPUTERS, ELECTRICAL PRECIPITATORS, LUBRICATION, MACHINE TOOLS, REMOTE CONTROL, RIVETED JOINTS, SERVOMECHANISMS
Algebraic approach to design of automatic controls (A) ... 587
Analytical study of linearized industrial process controllers (A) ... 49
Application limits and accuracies of control-valve flow coefficient CV (A) ... 49
Application of automatic digital-data-collecting to boiler testing ... 1016
Automated air defense (A) ... 869
Automated crankshaft machining (A) ... 1184
Automatic production of oil from wellhead to pipeline (A) ... 1062
Control problems in sodium-cooled graphite-moderated reactors ... 749
Correlation functions and noise patterns in control analysis (A) ... 586
Design of a self-optimizing control system (A) ... 587
Dynamic field tests of a process furnace (A) ... 586
Dynamic response study of a mechanical-hydraulic frequency-discriminator governor (A) ... 584
Effect of logarithmic element in an otherwise linear process-control system (A) ... 49
Electronically controlled milling machine (A) ... 36
Heidelberg control meeting attracts international group ... 105
Instrumentation and controls, Centralia Water Flood, Illinois (A) ... 1171
Introduction of numerical control for machine tools (A) ... 1146
Japan Society of Automatic Control receives ASME scroll ... 789
Linear force-input, pneumatic amplifier with fast response characteristics (A) ... 585
Method for presenting the response of temperature-measuring systems (A) ... 189
Multipliers for nonlinear, compensation of control systems (A) ... 587
North American Control Committee formed to advance science of automatic control ... 506
Phase-space method for analysis of nonlinear control systems (A) ... 189
Punch-card-controlled steel mill (A) ... 271
Responses of temperature-sensing-element analogs (A) ... 188
Signal stabilization of a control system (A) ... 486
Standardization of automatic controls terminology ... 819
Statistical treatment of sampled-data control systems for actual random inputs (A) ... 585
Technical memoranda, Instruments &

AUTOMATIC CONTROL (*continued*)
Regulators Division (A) 486
Unusual features of the Portland combustion control system (A) 1162
AUTOMATIC DISPATCHING. *See* POWER SYSTEMS
AUTOMATIC LOGGING. *See* POWER SYSTEMS
AUTOMATION. *See* MANUFACTURING, WOODWORKING
AUTOMOBILES. *See* MOTOR VEHICLES
AVERY, GEORGE RAYMOND
Obituary 1214
AWARDS. *See* HONORS AND AWARDS

B

BACHELER, A. T.
Modern adjustable-speed drives for textile machinery (A) 1168
BACKER, W. R.
On the basic mechanics of the grinding process (A) 378
BAGGISH, P. F.
What do modern high-pressure boilers demand of feedwater? (A) 480
BAHN, GILBERT S.
Technical ghostwriting (D) 975
BAIL, J. H.
Discussion of an application of automatic digital-data-collecting system to boiler testing ..... (A)772, 1016
BAILEY, ALBERT
Obituary 626
BAILEY, DANA HAMILTON
Obituary 1214
BAILEY, H. E.
Gas dynamics. Vol. 1, applied mathematics and mechanics (BR) 688
BAILEY, J. J.
Type of flame-excited oscillation in a tube (A) 971
BAKER, H. D.
Model method for determining geometric factors in solid-to-solid radiation heat transfer (A) 880
BAKER, J. M.
Design features of a gas turbine for a supercharged boiler (A) 1166
BAKER, RAYMOND
Obituary 1106
BALANCING. *See* ENGINE BALANCING
BALCERZAK, MARION J.
Receives Charles T. Main Award 73
BALDWIN, E. E.
Neutron radiation effects on tensile and impact properties of ASTM-A302 B steel 261, 782
BALEKJIAN, G.
Heat transfer from superheated vapors to a horizontal tube (A) 1068
BALMFORD, J. A.
Analysis of a process-fluid-flow network by electrical analogy 590
BANFIELD, FREDERIC E., JR.
Obituary 826
BARBER, A. D.
Dynamic response of beams and plates to rapid heating (A) 970
BARBER, EVERETT M.
Biography 72
Receives Richards Memorial Award 72
BARBER, HAROLD DALE
Obituary 714
BARBIER, J. E.
Engineering—tooled for action (A) 484
BARER, R. D.
Failure of a welded drying drum (D) 684
BARK. *See* FUELS
BARKER, JOSEPH WARREN
Elected president of EJC for 1957 108
1956—Then What?—Suggestions for future ASME activities 4
BARKLEY, WALTER RUSSELL
Obituary 826
BARNHART, K. E., JR.
Stresses in beams during transverse impact (A) 970
BARON, M. L.
Response of nonlinearly supported spherical boundaries to shock waves (A) 886
BARRETT, WALTER J.
Elected president of AIEE 1183
BARS
Displacements in a wide curved bar subjected to pure elastic-plastic bending (A) 884
Longitudinal impact of a semi-infinite circular elastic bar (A) 287
BARTAS, J. G.
Estimation of temperature patterns in multiply shielded systems (A) 376
BARTH, W. L.
Retires from standards posts 321
BARTHALAN, M. E.
French experience with free-piston engines 428
BASFORD, P. R.
Properties of friction materials
I, Experiments on variables affecting noise (A) 886
II, Theory of vibration in brakes (A) .. 886
BATCH, J. M.
Heat transfer "beyond burnout" for forced-convection bulk boiling (A) 768
BATES, G. O.
Eight years of experience with inert gas equipment (A) 1067
BATTERIES. *See also* FUEL CELLS
Nuclear battery (A) 369
BAUDRY, R. A.
Influence of load and thermal distortion on the design of large thrust bearings (A) 775
Oil seals to provide positive lubrication on large or high-speed thrust bearings (A) 774
BAVETTA, VINCENT EDWARD
Obituary 1106
BAXTER, W. G.
Thermal conductivity of insulating materials for use in nuclear reactors (A) 1071
BEAMS. *See also* BARS
Beams of uniform strength subjected to uniformly distributed loading (A) 380
Bending frequency of a rotating beam (A) 1167
Collapse strength of redundant beams after lateral buckling (A) 382
Dynamic response of beams and plates to rapid heating (A) 970
Interaction curves for shear and bending of plastic beams (A) 884
Natural frequencies of nonuniform beams on multiple elastic supports (A) 1072
Numerical procedure for calculating the large deflections of straight and curved beams (A) 286
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact (A) 1072
Response of beams and plates to random loads (A) 286
Specific damping energy of fixed-fixed beam specimens (A) 972
Stresses in beams during transverse impact (A) 970
Study of the propagation of flexural waves in elastic beams (A) 886
Vibration design charts (A) 190
BEAN, HOWARD S.
Receives AGA Award of Merit 206
BEAN, R. L.
Special car for high, wide, and heavy shipments (A) 682
BEARINGS. *See also* LUBRICATION, RESEARCH
Analysis of journal bearings with arbitrary load vector (A) 52
Application of digital computers to bearing design (A) 288
Bearings, lubricants, and lubrication—a digest of 1956 literature 842
Behavior of the lubricating film and side leakage of dynamically loaded bearings (A) 1164
Bibliography 850
Effect of heat conductance on slider-bearing characteristics (A) 776
Effect of lubricant inertia in journal-bearing lubrication (A) 971
Experiments on gas-lubricated journal bearings (A) 51
Fluid dynamic theory of gas-lubricated bearings (A) 52
Influence of load and thermal distortion on the design of large thrust bearings (A) 775
Isoelasticity in gyro rotor bearings (A) .. 1164
Oil seals to provide positive lubrication on large or high-speed thrust bearings (A) 774
On the theory of grease-lubricated thrust bearings (A) 52
BEARINGS (*continued*)
Prediction of journal-bearing temperatures by the application of heat-transfer theory and data (A) 775
Properties of misaligned journal bearings 50
Self-excited vibrations of an air-lubricated thrust bearing (A) 1163
Solution of Reynolds equation for finite journal bearings (A) 1164
Surface deformations in the hydrodynamic slider-bearing problem and their effect on the pressure development (A) 1164
Testing dynamically loaded bearings
I, A short history of bearing test machines (A) 52
II, A diesel-engine bearing test machine (A) 51
Theoretical and experimental analysis of hydrodynamic gas-lubricated journal bearings (A) 1164
Universal bearing tester (A) 51
BEATTIE, WAYNE STEVENSON
Obituary 126
BEECHER, D. T.
Thermodynamic properties of compressed water 939
BEICHLEY, F. W.
Professional experience (Digest) 817
BEJARANO, JULIO G.
Obituary 422
BELL, A. H.
Determination of turbine-stage performance for an automotive power plant (A) 580
BELL, K. J.
Heat transfer and fluid friction during flow across banks of tubes (A) 376
BELLOWS. *See* INSTRUMENTS—PRESSURE
BELSHEIM, R. O.
Delayed-yield time effects in mild steel under oscillatory axial loads (A) 188
BELTS. *See* MATERIALS HANDLING
BERG, IRWIN A.
Psychological tests (D) 496
BERGELIN, O. P.
Heat transfer and fluid friction during flow across banks of tubes (A) 376
BERGESON, LEROY SCOTT
Obituary 826
BERGMAN, ELMER O.
Biography 815
Failure of a welded drying drum (D) 685
Nominated for Director (Codes and Standards) 815
BERK, A. A.
Use of the Bureau of Mines condensate-corrosion tester for the survey of return-line deterioration (A) 480
BERRY, A. L.
Peace River and Alaska Highway gas-gathering system (A) 966
BERRY, J. R.
Pressure gradient sheet for rating gas pipelines (A) 1061
BERTOSSA, R. C.
Vacuum metallurgy—the "age-old art of brazing," combined with vacuum techniques 1039
BETHEL, JAMES R.
Handbook for small sawmill operators published 213
BETSER, A. A.
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact (A) 1072
BICKERSTAFF, T. H.
Air brakes for high-speed ultra-light-weight passenger trains 553
BIGGS, GEORGE A.
Obituary 530
BIOLOGY
Biotechnical problem of the human body as a heat exchanger (A) 881
Effect of heated condenser discharge upon aquatic life (A) 1160
BIOT, M. A.
Elastic coefficients of the theory of consolidation (A) 776
BIRKEBAK, R. C.
Measurements of the total absorptivity for solar radiation of several engineering materials (A) 880
BISHOF, C. A.
Conductivity versus sodium by flame spectrophotometer in steam purity studies (A) 480

BISHOP, G. W.
Do engineers stand a chance in small, private enterprise (C) ... 1204

BISSON, E. E.
On friction and lubrication at temperatures to 1000 F with particular reference to graphite (A) ... 1165

BITS. *See* PETROLEUM-WELL EQUIPMENT

BJORKLUND, I. S.
Heat transfer from a rotating cylinder with and without cross flow (A) ... 187

BLACK, J. J.
Trailers in piggy-back operation from a manufacturer's point of view (A) ... 380

BLACKALL, F. S., JR.
National standards in a modern economy (BR) ... 295
Recent technical and economic developments in Western Europe ... 27, 592

BLACKWOOD, D. E.
40-ft personnel boat with gas-turbine propulsion-engine installation features and operating experience (A) ... 284
Shipboard gas-turbine engine tests ... 1119

BLADES. *See* STEAM TURBINES

BLAKE, FRANCIS EUGENE
Obituary ... 714

BLASCHKE, T. C.
Design basis for cascade-type positional servomechanisms (A) ... 189

BLASER, R. U.
Receives Charles B. Dudley Medal ... 1181

BLAST FURNACES. *See* IRON AND STEEL MANUFACTURE

BLATCHLEY, C. G.
Control of steam-jet vacuum pumps (A) ... 1169

BLEIBERG, M. L.
Neutron radiation effects on properties of ASTM-A302 B steel (D) ... 781

BLIXT, GUSTAF F.
Obituary ... 422

BLOOD, R. H.
Development and field-testing of wire line retractable rock bits (A) ... 1065

BLOWERS
Equivalent performance parameters for turboblowers and compressors (A) ... 185

BLUEPRINTS. *See* STORAGE

BLUMBERG, H. S.
Fabricated pressure piping as related to nuclear applications (A) ... 474
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (A) ... 289
Requirements for fabrication of pressure piping as related to service (A) ... 1171

BOBCO, R. P.
Promotion of dropwise condensation of several pure organic vapors (A) ... 583

BOBO, R. A.
Reduced pressure drilling (A) ... 1170

BOBROWSKY, A. R.
Analytical methods for performance estimates of free-piston gasifiers (A) ... 582

BODNER, S. R.
General instability of a ring-stiffened, circular cylindrical shell under hydrostatic pressure (A) ... 383

BOEHM, WILLIAM H.
Obituary ... 530

BOGAR, W. H.
Fork truck stability—a study in moments (A) ... 379

BOGGS, J. H.
Investigation of pressure drop through a rotating pipe (A) ... 1062

BOHLMANN, E. G.
Stress-corrosion cracking problems in the homogeneous reactor test (A) ... 476

BOILER AND PRESSURE VESSEL CODE OF ASME
Interpretations ... 195, 393, 595, 784, 977, 1177
Revisions and addenda ... 198, 394, 596, 784, 979, 1177

BOILER CORROSION
Low-temperature deposits and corrosion in boilers (A) ... 481
Use of the Bureau of Mines condensate-corrosion tester for the survey of return-line deterioration (A) ... 480

BOILER FURNACES
Burning fluid coke (D) ... 386

BOILER TESTS
Discussion of an application of automatic digital-data-collecting system to boiler testing (A) ... 772

BOILERS. *See also* FEEDWATER TREATMENT
Application of automatic digital-data-collecting to boiler testing ... 1016
Boiler circulation theory (A) ... 870
Boiler vibration caused by combustion gas flow (A) ... 290
Chemical recovery boiler (A) ... 460
Heat-transfer studies of naval boilers (A) ... 965

BOILING. *See also* HEAT TRANSFER
Bubble growth rates in boiling (A) ... 961
Correlation of nucleate boiling burnout data (A) ... 962

BOLEY, B. A.
Dynamic response of beams and plates to rapid heating (A) ... 970

BOLTS AND NUTS
Biggest boltmaker (A) ... 951
Fasteners for 900 F (A) ... 667

BOND, R. K.
Engineering design, testing, and operation of the Gilsonite solids pipeline (A) ... 1171

BONDING. *See* ADHESIVES

BONI, FRANK
On the design of a liquid-metal-heated bayonet-tube steam generator (A) ... 973

BONSALL, JUDSON
Obituary ... 530

BOOK REVIEWS
Abacs or nomograms ... 99
Australia and the challenge of change ... 1175
Diesel operation and fault diagnosis ... 1077
The first one hundred and fifty years: a history of John Wiley and Sons ... 594
Foundations: design and practice ... 976
Gas dynamics. Vol. 1, applied mathematics and mechanics ... 688
Generation of electricity by wind power ... 392
Introduction to operations research ... 890
National standards in a modern economy ... 295
The next hundred years ... 1174
Professional amateur: the biography of Charles Franklin Kettering ... 498
Pump selection and application ... 593

BOOKS RECEIVED IN LIBRARY ... 99, 194, 296, 392, 499, 594, 689, 783, 891, 976, 1078, 1175

BORDEN, MORO MILLER
Obituary ... 714

BORING. *See* MACHINE-SHOP PRACTICE

BORN, J. S.
Some mixed boundary-value problems of the semi-infinite strip (A) ... 485

BORON. *See* FUELS

BOSTON, O. W.
Biography ... 71
Receives Blackall Machine Tool and Gage Award ... 71

BOTELER, W. C.
Combined free and forced convection in a constant-temperature vertical tube (A) ... 965

BOUDREAUX, G. S.
Reduced pressure drilling (A) ... 1170

BOUNDARY LAYER. *See* FLOW OF FLUIDS

BOWERMAN, R. D.
Experimental study of centrifugal-pump impellers (A) ... 186

BOYD, D. M.
Reports on evolution of Japanese industrial revolution ... 789

BOYD, WILLIAM WRAY
Obituary ... 422

BRAKES. *See also* RAILROAD BRAKES
Properties of friction materials
I, Experiments on variables affecting noise (A) ... 886
II, Theory of vibration in brakes (A) ... 886

BRAKING. *See* ELECTRIC MOTORS

BRAND, HORACE HOLLISTER
Obituary ... 530

BRAZING. *See* METALLURGY

BRECKENRIDGE, J. R.
Analysis of energy exchange between man and his environment ... 1029

BRICE, NORMAN E.
Obituary ... 626

BRIDGERS, F. H.
Solar heat for a building ... 536

BRIEFING THE RECORD ... 31, 169, 268, 356, 459, 563, 659, 754, 864, 944, 1044, 1145

BRIGHAM, W. E.
Two-phase concurrent flow of liquids and air through inclined pipe (A) ... 1062

BRITTAIN, RICHARD JAMES, JR.
Obituary ... 1010

BROACHING. *See* MACHINE-SHOP PRACTICE

BRONZE. *See* NONFERROUS ALLOYS

BROOKS, W. B.
Failure of a welded drying drum (D) ... 684

BROWN, D. D., JR.
Problems encountered in the selection and use of air-cooled, heat-transfer equipment (A) ... 47

BROWN, D. H.
Atomic-powered locomotive? (D) ... 688
Transient thermodynamics of reactors and process apparatus (A) ... 477

BROWN, HAROLD N.
Obituary ... 1214

BROWN, HARRY WHEELER
Obituary ... 626

BROWN, J. KENNETH
Conductivity versus sodium by flame spectrophotometer in steam purity studies (A) ... 480

BROWN, L. G.
Automatic sanding ... 546

BROWN, L. N.
Development and application of high density asphalt mastic coating (A) ... 1060

BROWNE, FRANK ATWOOD
Obituary ... 1214

BRUSQUINI, P. F.
Chipboard, the superior plywood-core material (A) ... 679

BRUST, GEORGE A.
Obituary ... 1106

BUBBLES. *See* BOILING

BUCKETS. *See* STEAM TURBINES

BUCKINGHAM, EARLE
Receives ASTE Gold Medal ... 509

BUCKLING
Buckling of initially imperfect cylindrical shells subject to torsion (A) ... 382
Buckling of rectangular plates with two unsupported edges (A) ... 1072
Buckling of thin cyclindrical shell under hoop stresses varying in axial direction (A) ... 970
Collapse strength of redundant beams after lateral buckling (A) ... 382
Donnell type theory for asymmetrical bending and buckling of thin conical shells (A) ... 972
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate (A) ... 885

BUDD, RALPH
Receives AICE Award of Merit ... 101

BUETTNER, KONRAD
Heat transfer and safe exposure time for man in extreme thermal environment ... 1031

BURDICK, D. G.
Guided missiles call for airborne auxiliary power systems for purposes other than propulsion ... 733

BURDICK, HERBERT
Obituary ... 326

BURNOUT. *See* BOILING

BURR, A. H.
Prediction of journal-bearing temperatures by the application of heat-transfer theory and data (A) ... 775

BURTON, W. DEAN
Obituary ... 126

BUSCH, W. H.
Floturn—a production process as well as a development (A) ... 967

BUSH, P. D.
Design and testing of containment provisions for the engineering test reactor (A) ... 973
Engineering and construction of the engineering test reactor (A) ... 476, (Part II) 769

BUVINGER, GEORGE A.
Obituary ... 530

BYER, HENRY EDWARD
Obituary ... 826

BYERS, HARRY RICHARD
Obituary ... 914

BYRNE, W. H.
Member of 1957 ASME Council ... 94

C

CABLES. *See also* ELECTRICAL CABLES
Motion and stress of an elastic cable due to impact (A) ... 886

CACIOPPO, A. J.
Pilot information utilization: a study in human response dynamics (A) 486

CALENDERING. *See* PLASTICS

CALENDERS. *See* ROLLS

CALHOUN, DALE C.
Burning fluid coke (D) 386

CAMERON, D. H.
New type automatic dispatching system at Kansas City (A) 483

CAMERON, G. W.
Mechanical design approach to simplified maintenance (A) 681

CAMP, J. M.
Development and field-testing of wire line retractable rock bits (A) 1065

CAMPBELL, C. B.
Eddystone superpressure unit (cond.) ... 132

CAMPBELL, DONALD
Obituary 1214

CAMPBELL, G. P.
How to drill 6Al-4V titanium alloy 1025

CAMPBELL, H. T.
Scheduling engineering design—a vital force in refinery operations (A) 1063

CAMPBELL, R. K.
Tool-work-thermocouple compensating circuit (A) 479

CAMS
Numerical method for determing cam-follower response (A) 1168

CANBY, HARRY BEAVER
Obituary 826

CARBIDES. *See* MACHINE TOOLS, METAL CUTTING

CARBURIZING. *See* INDUSTRIAL FURNACES

CARELLI, A.
Development of gas turbines for road vehicles 645

CARLISS, OSWALD S.
Reducing power consumption in hydraulic circuits (AC) 495

CARLSON, HAROLD C. R.
Biography 1205
Elected fellow of ASME 1205

CARLSON, N. E.
Rail-highway co-ordination (A) 675

CARLSON, P. G.
40-ft personnel boat with gas-turbine propulsion-engine installation features and operating experience (A) 284

CARLSON, R. D.
UO_2-NaK slurry studies in loops at 600 C (A) 472

CARMINE, C. C.
Control of manpower and material by planning and scheduling maintenance work (A) 771

CARNES, HERMAN WOOD
Obituary 126

CARR, DOUGLAS BERNARD
Obituary 1010

CARR, HUGH RODERICK
Obituary 126

CARROLL, C. D.
Refueling systems for boiling-water reactors (A) 771

CARTER, W. J.
Torsion and flexure of slender solid sections (A) 1167

CASANOVA B., MAURICIO
Engineer's working relations abroad (D). 1173

CASEY, D. F.
Heat transfer to lead-bismuth in turbulent flow in an annulus (A) 187

CASEY, JOHN EDWARD
Obituary 422

CASINGS. *See* PETROLEUM-WELL EQUIPMENT

CASSELMAN, R.
Case for the hollow core (A) 679

CAST IRON
Flow and fracture of nodular cast iron (A) 188

CASTINGS. *See* ALLOYS

CAVITATION
Accelerated field test of cavitation intensity (A) 288
Cavitation in water turbines (A) 45
Photoelastic study of strain waves caused by cavitation (A) 886
Progress report on standardization of the vibratory-cavitation test (A) 185

CEELY, F. J.
Effort to use a laboratory test as an index of combustion performance (A) ... 53

CEMENTED JOINTS
Theory of adhesive scarf joints (A) 285

CENTRIFUGAL MACHINES
Heat transfer in thin-film, centrifugal processing units (A) 1070
Sizing of centrifugal separators for residual fuels (A) 677

CERAMIC MATERIALS. *See* HIGH-TEMPERATURE MATERIALS, MACHINE TOOLS, METAL CUTTING

CESS, R. D.
Heat transfer to fluids with low Prandtl numbers for flow across plates and cylinders of various cross sections (A). 1071
Heat transmission to fluids with low Prandtl numbers for flow through tube banks (A) 964

CHADWICK, W. L.
Further steam-electric-generation expansion in Southern California (A) 772

CHAINS. *See* DRIVES

CHANDLER, HOWARD MCCUNE
Obituary 914

CHANG, YAN PO
Theoretical analysis of heat transfer in natural convection and in boiling (A).. 187

CHAO, B. T.
Temperature distribution at tool-chip and tool-work interface in metal cutting (A) 479
Tool-work-thermocouple compensating circuit (A) 479
Transient interface temperatures in plain peripheral milling (A) 479

CHAPMAN, W. R.
Missile auxiliary power-supply development (A) 969

CHARTERS, W. W. S.
Dynamic response characteristics of gas turbines (A) 1166

CHASE, CHARLES HARRIS
Obituary 1106

CHATTERTON, E.
Future developments of the high-speed diesel engine (A) 282

CHEMICAL ANALYSIS
Push-button analysis (A) 1052

CHEMICAL ELEMENTS
Element 102 discovered—nobelium proposed as name (A) 869

CHEMICAL INDUSTRY
Designing process plants in relation to maintenance (A) 878
Role of the mechanical engineer 18
Standardization of centrifugal chemical pumps (A) 878

CHIPBOARD. *See* PLYWOOD

CHIPS AND CHIP FORMATION. *See* METAL CUTTING

CHISHOLM, CHARLES ROUNDS
Obituary 714

CHISHOLM, D.
Two-phase flow in rough tubes (A) 968

CHOU, Y. T.
Effect of lubricant inertia in journal-bearing lubrication (A) 971

CHRISTIANSON, C. C.
Dynamic response study of a mechanical-hydraulic frequency-discriminator governor (A) 584

CHROMIUM. *See also* ELECTROPLATING

CHURCHILL, D. E.
Convective heat transfer from high-temperature air inside a tube (A) 1070

CHUTE, A. T.
Design and testing of containment provisions for the engineering test reactor (A) 973
Engineering and construction of the engineering test reactor—Part II (A).. 769

CISLER, WALKER LEE
Receives Washington Award 601
Young talent needed in atomic power field (A) 396

CITIZENSHIP
The California Water Plan 858
Civic responsibility? (C) 491
Developing social awareness in engineers ..... 457, (D) 1076

CIVILIZATION
The next hundred years (BR) 1174

CLAMPS. *See* PETROLEUM-WELL EQUIPMENT

CLAPP, WILLIAM HOWARD
Obituary 218

CLARK, A. G.
Appraisal of compressor-cylinder cooling requirements (A) 677

CLARK, A. V.
Simplified method for the study of two-dimensional transient heat flow using resistance paper (A) 583

CLARK, J. W.
Specific damping energy of fixed-fixed beam specimens (A) 972

CLARK, JOHN A.
Biography 73
Dynamic response of heat exchangers having internal heat sources ..... Part I (A) 880, Part II (A) 963
Receives Pi Tau Sigma Gold Medal 73

CLARK, P. M.
Control-rod and drive mechanism for the engineering test reactor (A) 769

CLARK, R. N.
Compensation of steady-state flow forces in spool-type hydraulic valves (A) 185

CLARKE, CHARLES W. E.
Biography 68
Honorary Member of ASME 68

CLARY, FRANK ALFRED, JR.
Obituary 126

CLAY
Transient heat flow determination of the thermal properties of clay (A) 377

CLOCKS
Tercentenary of the pendulum clock (A) 182

CLORAN, EVERETT MICHAEL
Obituary 218

CLORITE, P. A.
Influence of various grinding conditions upon residual stresses in titanium (A). 479

CLOUGH, W. R.
Flow and fracture of nodular cast iron (A) 188

COAL
Determination of heat content of coal by regression analysis (A) 53
Evaluating coal by utilization cost (A) ... 383
Sound methods of solid fuel evaluation for use in thermal power stations (A).. 1169
Thermal stabilization of anthracite by calcination (A) 1170
Trends and prospects in coal 550

COAL HANDLING
Discussion of dust suppression in coal handling (A) 481
Self-discharging collier (A) 1052

COATINGS
Development and application of high density asphalt mastic coating (A) 1060
New materials that the design engineer should know about 720

COCKRAM, WILLIAM
Obituary 714

CODES. *See subject of code*

COFFIN, L. F., JR.
Investigation of thermal stress fatigue as related to high-temperature piping flexibility (A) 483

COHEN, E. S.
Radiant heat exchange in a gas-filled enclosure (A) 1069

COHEN, EDGER FABIAN
Obituary 1010

COHEN, H.
Two-dimensional, steady, cavity flow about slender bodies in channels of finite breadth (A) 381

COHEN, L.
Heat-transfer studies of naval boilers (A) 965

COLE, W. H.
Experimental investigation of critical design factors for vane-type cyclone collectors (A) 590

COLLIERS. *See* COAL HANDLING

COLLINS, FRANCIS ALTON
Obituary 826

COLLIPP, BRUCE G.
Offshore mobile units—present and future ..... (A) 48, 335

COMBUSTION
Effect of intake combustion-air conditioning on performance of spark ignition gas engines (A) 678
Effort to use a laboratory test as an index of combustion performance (A) 53
Ignitibility testing as a measure of the burning characteristics of solid fuels (A) 52
Progress report—Ignitibility of solid fuels and burning rates of fixed carbon (A) 53

COMBUSTION CONTROL. *See* AUTOMATIC CONTROL

COMBUSTORS. *See* GAS TURBINES

COMES, R. N.
High-horsepower Banbury mixing (A)... 292

COMMUNICATIONS
Design of multivariable optimum filters (A)... 585

COMPRESSED AIR
Ice-free navigation (A)... 362

COMPRESSIBILITY
Elastic coefficients of the theory of consolidation (A)... 776

COMPRESSORS
Aerodynamics design of vaned diffusers for centrifugal compressors (A)... 283
Appraisal of compressor-cylinder cooling requirements (A)... 677
Automatic, spray desuperheating, closed system for testing compressors (A)... 482
Bibliography on free-piston engines and compressors... 339
Equivalent performance parameters for turbo-blowers and compressors (A)... 185
Investigation of the interaction of windage and leakage phenomena in a centrifugal compressor (A)... 482
Modernizing compressor station piping (A)... 1061
Operating considerations in the application of gas-turbine-driven centrifugal pipeline compressors (A)... 46
Recovery ratio—a measure of the loss recovery potential of compressor stages (A)... 478
Remote-controlled, engine-driven, centrifugal, gas-compressor station (A)... 48
Skewed boundary-layer flow near the end walls of a compressor cascade (A)... 377
Teflon-based piston rings for nonlubricated applications... 838
Two-dimensional inflow conditions for a supersonic compressor with curved blades (A)... 381
Two-stage free-piston engine (A)... 954

COMPUTERS
ASME Instruments and Regulator Division joins AIEE and IRE in meeting on computers in control... 903
Analog computer symposium proceedings published by Midwest Research Institute... 604
Application of an analog computer to the measurement of process dynamics (A)... 49
Application of digital computers to bearing design (A)... 288
Automatic computing for process-unit operating guides (A)... 966
Computer application in forecasting daily peak loads for an electric utility (A)... 568
Computer applications in the power industry (A)... 968
Computer-controlled shipping center (A)... 1044
Computer representations of engineering systems involving fluid transients (A)... 186
Desk-side electronic computer (A)... 1046
Graphical versus computer techniques—for mechanism analysis (A)... 383
Method for solving problems of irrotational gas flow by means of high-speed digital computers (A)... 971
New "brain" for solving business management problems (A)... 359
Small electronic brain (A)... 660
Supercomputer for Los Alamos Scientific Laboratory (A)... 34
Two applications of a digital computer to machine design problems (A)... 289
U. S. in midst of switching revolution (A)... 510
University computer center (A)... 40
Use of digital computers in the mechanical design of large steam turbines (A)... 288
Use of high-speed computers in the design and appraisal of helical gears (A)... 486

CONANT, LAWRENCE W.
Industrial engineering—a definition and forecast (D)... 495

CONDENSATION
Promotion of dropwise condensation of several pure organic vapors (A)... 583

CONDENSERS. *See* STEAM CONDENSERS

CONDUITS. *See* FLOW OF FLUIDS

CONRAD, J. C.
Operating experience with high-temperature steam rotors and design improvements in rotor blade fastening (A)... 1161

CONSOLIDATION. *See* COMPRESSIBILITY

CONTAINMENT VESSELS. *See* POWER PLANTS—NUCLEAR, STRUCTURES

CONTAMINATION. *See* RADIOACTIVITY

CONTROL. *See* AUTOMATIC CONTROL, NATURAL-GAS PIPELINES, POWER PLANTS—NUCLEAR, RADIOACTIVITY, REMOTE CONTROL

CONVECTION. *See* HEAT TRANSFER

CONVEYERS. *See* MATERIALS HANDLING

CONWAY, H. D.
Numerical procedure for calculating the large deflections of straight and curved beams (A)... 286

COOGAN, CHARLES H., JR.
Receives honorary membership in Pi Tau Sigma... 507

COOK, CHARLES BANNISTER
Obituary... 714

COOKE, MORRIS LLEWELLYN
Civic responsibility? (C)... 491

COOLING SYSTEMS
Appraisal of compressor-cylinder cooling requirements (A)... 677
Basic equations for predicting performance of a nuclear power plant pressurizer (A)... 473
Design and development of the coolant system for the sodium reactor experiment (A)... 472
Gas coolant for nuclear reactors (A)... 473
Heat-transfer considerations in the use of organic reactor coolants (A)... 473
Pumps for nuclear power plants (A)... 474
Total normal emissivity measurements for porous materials used for mass-transfer cooling (A)... 1071
Use of boiling water as a reactor coolant (A)... 472

COOLING TOWERS
Cooling towers for steam-electric stations—selection and performance experiences (A)... 191
Instrumenting a field study of industrial water-cooling tower performance (A).. 288

COON, G. A.
Responses of temperature-sensing-element analogs (A)... 188

COOPER, G. D.
Oil seals to provide positive lubrication on large or high-speed thrust bearings (A)... 774

COOPER, G. T.
Heat transfer between fluidized solids beds and boundary surfaces—correlation of data (A)... 1070

COOPER, R. M.
Cylindrical shells under line load (A)... 970

COOVER, M. S.
Toward unity? AIEE president's report on suggested division of activities of AIEE, ECPD, EJC, and NSPE... 693

COPIAN, L. P.
Pulp-and-paper-mill trends toward integrating power and bark-burning boilers (A)... 583

CORBETT, J. W.
Importance of the mechanical engineer to the railroad industry... 929

CORE MATERIALS. *See* WOOD INDUSTRIES

CORROSION. *See also* BOILER CORROSION
Cast stainless pumps for corrosive environments (A)... 757
Corrosion prevention of railroad cars (A). 674
Stress-corrosion cracking problems in the homogeneous reactor test (A)... 476

COST ANALYSIS
How to analyze the cost of machine tools (D)... 391

COUCH, A. L., JR.
Production engineering of solid-fuel rocket motors (A)... 582

COULTER, S. B.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines (A)... 483

COURVOISIER, PETER
The solar engine: an analysis... 445

COWING, GUY R.
Distinguishing characteristics of mechanical engineers... 649

COWLEY, P. E. A.
Application of an analog computer to the measurement of process dynamics (A)... 49

COX, A. R.
Gas-turbine generating experience of West Texas Utilities Company (A)... 580

COX, FRANK GARDNER
Obituary... 914

CRACK PROPAGATION. *See* STRESSES AND STRAINS

CRANDALL, S. H.
Improvement of the Holzer table based on a suggestion of Rayleigh's (A)... 285

CRANES. *See* HOISTING MACHINERY, IRON AND STEEL MANUFACTURE

CRANKS. *See* MECHANISMS

CREAGAN, ROBERT J.
Yankee pressurized-water reactor (cond.)... 236

CREDE, CHARLES E.
Biography... 812
Nominated for Regional Vice-President. 812

CREEP OF MATERIALS. *See also* METAL CREEP
Creep of thick tubes under internal pressure (A)... 972

CROFT, HUBER O.
Biography... 1205
Elected Fellow of ASME... 1205

CRONIN, E. W.
Penton—a new chlorine-containing polyether (A)... 292

CROSBIE, R.
Measurement of the heating of the skin during exposure to infrared radiation.. 1033

CROSSETT, J. W.
Corrosion prevention of railroad cars (A)... 674

CROUCH, JOEL ELMER
Obituary... 1106

CRYSTALLOGRAPHY
Iron crystal whiskers (A)... 170

CSISEK, JOHN J.
Obituary... 1010

CULLIMORE, ALLEN REGINALD
Obituary... 126

CUNNINGHAM, JAMES D.
Receives Missouri Honor Award for Distinguished Service in Engineering.. 508

CUNNINGHAM, R. G.
Jet-pump theory and performance with fluids of high viscosity (A)... 186

CURELL, C. O.
Aluminum in freight cars (A)... 674

CURRAN, R. M.
Austenitic steels in high-temperature steam piping (A)... 484

CURTICE, H. H.
What's ahead for business? (A)... 106

CUTCLIFFE, J. L.
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate (A)... 885

CYCLONES. *See* DUST COLLECTORS, DUST SEPARATORS, PETROLEUM REFINING

CYLINDERS. *See also* PRESSURE VESSELS, SHELLS
Radial deflections of a cylinder subjected to equal and opposite concentrated radial loads (A)... 284

CYSTOSCOPES. *See* INSTRUMENTS

D

D'ARUSCO, J. S.
Guided missiles call for airborne auxilary power systems for purposes other than propulsion... 733

DALZELL, R. C.
Impact of atomic energy on fossil fuels (A)... 54

DAMS
Serre Ponçon Dam (A)... 183

DANNENBERG, K. K.
Production engineering of large liquid-fuel rocket engines (A)... 582

DARLING, H. N.
Military petroleum logistics (A)... 1063

DART, WILLIAM CHART
Obituary... 1214

DATA-COLLECTING SYSTEMS. *See* INSTRUMENTS

DAVIS, D. S.
Alignment diagrams (D)... 492

DAVIS, GEORGE HENRY
Obituary... 914

DAVIS, HUNT
Equivalent performance parameters for turboblowers and compressors (A)... 185

DAY, C. E., JR.
Evaluating coal by utilization cost (A).. 383

DEAN, DION KANOUSE
Obituary ... 914

DECKER, A. L.
Mechanical seals for nonlubricating hydrocarbons (A) ... 1067

DECONTAMINATION. *See* RADIOACTIVITY

DE CORIOLIS, E. G.
Named "Engineer of the Year for 1957" by Toledo Technical Council ... 508

DE FOREST, D. R.
Investigation of the generator rotor burst at the Pittsburgh Station of the Pacific Gas and Electric Company (A) ... 1162

DEFORMATION
Deformation of elastic paraboloid shells of revolution (A) ... 885
On the principle of Haar and von Karman in statistically determinate problems of plasticity (A) ... 777
Practical solution of plastic deformation problems in the elastic-plastic range (A) ... 478

DEICHLER, J. K.
Selection of materials for construction of catalytic reforming units (A) ... 47

DE LAPOTTERIE, HARRY
Obituary ... 1214

DEMOLITION
Powder-lancing for concrete removal (A) ... 1149

DENISON, E. W.
Automation and new methods for overhaul (A) ... 680

DE SILVA, C. NEVIN
Deformation of elastic paraboloid shells of revolution (A) ... 885

DE VRIES, REIMIER PYL
Obituary ... 714

DEWEY, SYDNEY LENNON
Obituary ... 1106

DHANAK, A. M.
Momentum and mass transfer by eddy diffusion in a wetted-wall channel (A) ... 1069

DIAMONDS
Synthetic diamonds ready for production (A) ... 1154

DIAPHRAGMS
Diaphragm characteristics (A) ... 486
Some suggestions for research in diaphragm technology (A) ... 487

DICK, I. B.
Failure of a welded drying drum (D) ... 685

DICKEY, PAUL SMITH
Biography ... 1206
Elected Fellow of ASME ... 1206

DICKINSON, JOHN A.
Receives honorary degree from Stevens Institute of Technology ... 416

DICKINSON, N. L.
Heat transfer to supercritical water (A) ... 963

DICKINSON, R. O., JR.
Fresh approach to aircraft landing-gear design (A) ... 679

DIE CASTING
Aluminum investment casting (A) ... 1155

DIESEL ENGINES. *See also* LOCOMOTIVES—DIESEL
Chromium plating development at the U. S. Naval Engineering Experiment Station (A) ... 677
Design and development of a two-cycle turbocharged diesel engine (A) ... 380
Diesel operation and fault diagnosis (BR) ... 1077
Future developments of the high-speed diesel engine (A) ... 282
Test equipment for use in diesel engine maintenance (A) ... 675
Testing dynamically loaded bearings—II, A diesel-engine bearing test machine (A) ... 51
Use of heavy fuel in high-speed diesel engines on river towboats (A) ... 676

DIETZ, A. G. H.
Developments in plastics engineering (D) ... 783
Fire safety of engineered timber construction (D) ... 1075

DIFFERENTIAL ANALYZERS. *See* MATHEMATICS

DIFFUSERS. *See* COMPRESSORS, FLOW OF FLUIDS

DILL, RICHARD S.
Obituary ... 914

DISKS. *See also* FLOW OF FLUIDS
Stress distributions in rotating disks subjected to creep including effects of variable thickness and temperature (A) ... 383

DISTILLATION
Vacuum flash distillation of sea water (A) ... 878

DI TARANTO, R. A.
Natural frequencies of nonuniform beams on multiple elastic supports (A) ... 1072

DITTRICH, R. T.
Pressure drop and air flow distribution in gas-turbine combustors (A) ... 478

DIXON, EDGAR OGLE
Obituary ... 218

DOI, S.
Experimental study on chatter vibrations in grinding operations (A) ... 378

D'OMBRAIN, G. L.
Effect of a logarithmic element in an otherwise linear process-control system (A) ... 49

DONOVAN, J.
Heat transfer in thin-film, centrifugal processing units (A) ... 1070

DONWORTH, ROBERT B.
Receives Prime Movers Committee Award ... 73

DORN, J. E.
Effects of stress on creep at high temperatures (A) ... 285

DOSKER, C. D.
Core materials for plywood—standard lumber cores (A) ... 679

DOUGLASS, DWIGHT
Receives honorary membership in Pi Tau Sigma ... 507

DOUMAS, M.
Spray-dryer design calculations (A) ... 590

DOWER, E. J.
Selection of carbide-tipped saw blades for optimum performance (A) ... 678

DOWN, SIDNEY GEORGE
Obituary ... 218

DOYLE, WILLIAM L. H.
Biography ... 1206
Elected Fellow of ASME ... 1206

DRAFT GEARS. *See* RAILROAD CARS

DRAFTING PRACTICE
Techniques of drawing in the third dimension (A) ... 588

DRAKE, W. B.
Heat transfer to flow in a round tube with arbitrary velocity distribution (A) ... 965

DRAKE, WILLIAM VICTOR
Obituary ... 914

DRILLING. *See also* PETROLEUM-WELL EQUIPMENT
How to drill 6Al-4V titanium alloy ... 1025
Spiral drill point (A) ... 1146

DRIVES. *See also* ELECTRIC MOTORS
Power drives for warp-preparation machines (A) ... 1168
Proved concepts in oil field roller chain drive selection (A) ... 1066

DROP HAMMER
Impact stresses in drop-hammer guides (A) ... 588

DROPKIN, D.
Heat-transfer rates to cross-flowing mercury in a staggered tube bank—II (A) ... 964
Prediction of journal-bearing temperatures by the application of heat-transfer theory and data (A) ... 775

DRYING
Spray-dryer design calculations (A) ... 590

DU BOIS, G. B.
Properties of misaligned journal bearings (A) ... 50

DUCTS. *See* HEAT TRANSFER

DUFFY, J.
Stress-strain relations and vibrations of a granular medium (A) ... 776

DUKLETH, E. A.
Design and testing of containment provisions for the engineering test reactor (A) ... 973
Engineering and construction of the engineering test reactor—Part II (A) ... 769

DUNK, A. C.
Resistance to rolling and sliding (A) ... 682

DUNN, C. P.
Engineer's working relations abroad. 432, 1173

DUNNING, JOHN R.
U. S. must meet USSR challenge to maintain strength, progress (A) ... 1082

DURAND, WILLIAM F.
Receives scroll of commendation from the Community Councils of the City of New York ... 399

DURELLI, A. J.
Experiments for the determination of transient stress and strain distribution in two-dimensional problems (A) ... 286

DURST, S. H.
Core materials for plywood—standard lumber cores (A) ... 679

DUST. *See* COAL HANDLING

DUST COLLECTORS. *See also* ELECTRICAL PRECIPITATORS
Dust and fume control ... 1022
Experimental investigation of critical design factors for vane-type cyclone collectors (A) ... 590
Filter-type dust collector (A) ... 762
High-efficiency fly-ash collectors (A) ... 867
Wet-inertial dust collector (A) ... 759

DUST SEPARATORS
Head loss in flow through a cyclone dust separator or vortex chamber (A) ... 382

DWYER, H. L.
Industrial plant installation of a gas turbine to generate power and process steam (A) ... 48

DWYER, O. E.
Heat-transfer rates to cross-flowing mercury in a staggered tube bank—II (A) ... 964

DYNAMICS. *See also* GAS TURBINES, GASES
Some dynamics of the golf shot (A) ... 587

E

EARTH SATELLITES
Computing satellite path (A) ... 864
Sputniks (A) ... 1145

EASTMAN, FRED CECIL
Obituary ... 422

ECKERD, J. W.
Thermal stabilization of anthracite by calcination (A) ... 1170

ECKERT, E. R. G.
New method to measure Prandtl number and thermal conductivity of fluids (A) ... 380
Review of heat-transfer literature—1956. ... 433
Total normal emissivity measurements for porous materials used for mass-transfer cooling (A) ... 1071

ECKLUND, E. EUGENE
Practical EnginScope for field maintenance (A) ... 677

ECONOMICS
Recent technical and economic developments in Western Europe ... 27, (D) 592

EDDISON, W. BARTON
Receives Trinks Industrial Heating Award ... 1181

EDITORIALS
Annual meeting ... 1015
Dr. Irving Langmuir ... 919
EBWR in operation ... 223
Free exchange of knowledge ... 3
High-school science teaching ... 331
Improving science instruction ... 831
International Geophysical Year ... 535
Joseph Leonard Kopf—a tribute ... 1111
Meetings deadline dates ... 427
Nuclear congress and unity ... 131
Nuclear engineering ... 223
Power magazine completes 75 years ... 1015
Silent lecturers: Arthur T. Vanderbilt and Piero Fererio ... 719
Toward unity? ... 631

EDSE, R.
Design of supersonic expansion nozzles and calculation of isentropic exponent from chemically reacting gases (A) ... 379

EDUCATION
ASME forum on education ... 893
ASME Woman's Auxiliary reports on scholarship funds ... 906
Classroom first line of defense in fight to wipe out engineering manpower shortage ... 893
Cooper Union and training the "uncommon" man ... 205
Co-operative education—where it stands, its place in the future (A) ... 690
"Engineering enrollment in the United States"; a study published by N.Y.U. Press ... 604
Fellowships in nuclear-energy technology available ... 103
Freeman Fellowships available in 1957 for study or research in hydraulics ... 118
Graduate study in mechanical engineering ... 157
Graduate-study program for Western Electric engineers ... 1189
High-school science teaching (Ed) ... 331

EDUCATION (*continued*)
Improving science instruction (Ed) 831
Industry participates in exchange of students for technical experience 315
Integrated educational system needed ... 458
Model schools for gifted students proposed (A) 109
Novel thermodynamics course at Lehigh reviewed at year's end 600
Technical education is topic of Columbia University engineering conference 402
U. S. must meet USSR challenge to maintain strength, progress (A) 1082
What effect have recent inventions and discoveries had on engineering curriculums and education? 1079
Young mechanical engineering in teaching 414

EDWARDS, W. T.
Psychological tests (D) 497

Eggen, D. T.
Design and development of the coolant system for the sodium reactor experiment (A) 472

EICHBERGER, L. C.
Nonhomogeneous yielding of steel cylinders; 1—mild steel (A) 188

EICHHORN, R.
Description of a new sensitive micromanometer (A) 881

EIGENBROT, JOHN L.
Obituary 626

EIGENVALUES. *See* MATHEMATICS

EJECTORS. *See* PUMPS—JET

EKLUND, JOEL
Obituary 218

ELASTICITY. *See also* PLASTICITY
Elastic moduli measurement by ultrasonic technique (A) 755
Mixed boundary-value problem of elasticity with parabolic boundary (A) ... 383
Motion and stress of an elastic cable due to impact (A) 886

ELECTRIC ANALOGY
Analog study of a high-speed recording servomechanism (A) 586
Analysis of a process-fluid-flow network by electrical analogy (A) 590
Criteria for validity of lumped-parameter representation of ducting airflow characteristics (A) 49
Dynamic study of an experimental pneumatic process-pressure transmitter (A) 587
Effectiveness of stub fins as determined by the Teledeltos paper analog (A) 960
Performance prediction for a process heat-and-power complex by resistance concept (A) 775
Responses of temperature-sensing-element analogs (A) 188
Simplified method for the study of two-dimensional transient heat flow using resistance paper (A) 583

ELECTRIC CABLES
Electrical cable in tape form with polyester insulation (A) 872

ELECTRIC MOTORS
D-c braking of a-c motors in the textile industry (A) 1168
Modern adjustable-speed drives for textile machinery (A) 1168
Modern textile motors (A) 1169
Vibration modes of stators of induction motors (A) 285

ELECTRICAL EQUIPMENT
Mechanical problems involved in short circuits on core-form power-transformer coils (A) 682

ELECTRICAL PRECIPITATORS
Automated precipitators (A) 365, 659

ELECTRONICS. *See also* AUTOMATIC CONTROL
"Spacistor" semiconductor for amplification in electronic devices (A) 871

ELECTROPLATING
Chromium plating development at the U. S. Naval Engineering Experiment Station (A) 677
Plating-machine design (A) 952

ELGAR, E. C.
Modes of adiabatic and diabatic fluid flow in an annulus with an inner rotating cylinder (A) 964

ELLIOTT, V. A.
Dresden boiling-water reactor (cond.) ... 238

ELROD, H. G., JR.
New finite-difference technique for solution of the heat-conduction equation, especially near surfaces with convective heat transfer (A) 290

ELSESSER, T. M.
Influence of repeated bending loads on biaxial residual stresses in shot-peened plates (A) 188

ELWELL, R. C.
Theoretical and experimental analysis of hydrodynamic gas-lubricated journal bearings (A) 1164

EMPLOYMENT. *See also* ENGINEERS' EARNINGS
ASME survey shows industry must revamp battle of engineers shortage ... 409
Do engineers stand a chance in small, private enterprise? ..... 908, (C) 1204
Do the oldsters want jobs? ESPS wants to know 122
Psychological tests (D) 496
Young mechanical engineering in teaching 414

EMULSIFIERS. *See* ULTRASONICS

ENERGY. *See* POWER

ENGINE ANALYZERS
Industrial-engine analyzer (A) 1047

ENGINE BALANCING
Engine balancer for motor vehicles (A) .. 865

ENGINEERING. *See also* MANAGEMENT, MANUFACTURING
Electronic data processing machines; controls for design and engineering procedures 632
Engineering Exhibition, London (A) 1058
Golden age of engineering (A) 405
Organize your engineering project (A) ... 1172
Recent technical and economic development in Western Europe ... 27, (D) 592

ENGINEERING CENTER
UET report highlights new Engineering Center in New York 103
UET reveals site of new Engineering Center in New York 816

ENGINEERING DRAWINGS. *See* FILING SYSTEMS

ENGINEERING FOUNDATION
Foundation grants for 1955–56 105
Makes grants to 28 projects 790

ENGINEERING INSTITUTE OF CANADA
Annual meeting, Banff, 1957 787

ENGINEERING PROFESSION
Professional development for the young engineer 1093
Report from Dixie on the professional development of the young engineer ... 620
What can the young engineer do to develop professionally? 817, 1202
Your future demands a survey of the engineering profession 1037

ENGINEERING PUBLICATIONS
AEC announces first *Unclassified Engineering Materials List* 311
"*Creative Engineering*" a recent compilation of nine papers issued by ASME ... 208
The first one hundred and fifty years: a history of John Wiley and Sons (BR) 594
Free exchange of knowledge (Ed) 3
"*The IBM Journal of Research and Development*," started in 1957 208
Literature notes 1190
Power magazine completes 75 years (Ed) 1015
Second Nuclear Engineering and Science Conference proceedings published 1195

ENGINEERING SOCIETIES. *See also* INSTITUTION OF MECHANICAL ENGINEERS
ASME and ARS plan assures broader co-operation 1186
EJC and affiliate member societies 20
Meetings of other societies 101, 108, 206, 304, 399, 403, 507, 510 603, 605, 810, 898, 986, 1081, 1180, 1189
Toward unity? (Ed) 631
Toward unity? AIEE president's report on suggested division of activities of AIEE, ECPD, EJC, and NSPE 693

ENGINEERING SOCIETIES LIBRARY
Annual report, 1956 104

ENGINEERING SOCIETIES PERSONNEL SERVICE, INC.
Do the oldsters want jobs? ESPS wants to know 122
Positions available..122, 215, 322, 418, 526, 623, 712, 822, 910, 1007, 1103, 1210

ENGINEERS. *See also* WOMEN ENGINEERS
ASME survey shows industry must revamp battle of engineers shortage ... 409
Are engineers professional? (C) 1076
Developing social awareness in engineers ..... 457, (D) 1076
Distinguishing characteristics of mechanical engineers 649
Engineer's working relations abroad .... 432, (D) 1173
From junior to project engineer 710

ENGINEERS (*continued*)
Graduate study in mechanical engineering 157
Human factors in engineering management ..... 152, (D) 687
Personality factors in engineering practice (A) 974
Young engineer in a small company 524

ENGINEERS' COUNCIL FOR PROFESSIONAL DEVELOPMENT
Affiliation of ECPD and EJC 160
24th annual report presented 604

ENGINEERS' EARNINGS
Are engineers underpaid? A panel discussion 165
Engineers' starting salaries continue spiralling upward 905
"*The professional income of engineers—1956*"; an EJC report 604
Trends in professional compensation 316

ENGINEERS JOINT COUNCIL
Affiliation of ECPD and EJC 160
Annual report, 1956 604
EJC and affiliate member societies 20
General Assembly, January, 1957 114
Third annual general assembly, 1957 298

ENGINEERS' REGISTRATION
Continuation of listing of State Boards for engineering registration 1003

ENGINES. *See also* DIESEL ENGINES, GAS TURBINES, MARINE ENGINEERING, ROCKETS
Development of a supercharged medium speed two-cycle opposed-piston engine (A) 282
Expansion engine for gas liquefication (A) 870
Free-piston engine (A) 1059
French experience with free-piston engines 428
Manufacturing small engines (A) 1166
Practical Engin Scope for field maintenance (A) 677
Two-stage free-piston engine (A) 954

ENGINES—GAS
Effect of intake combustion-air conditioning on performance of spark ignition gas engines (A) 678
Study of industrial-engine operation (A). 676
Turbocharging development for loop-scavenged two-cycle gas engines (A).. 678

ENGINES—INTERNAL-COMBUSTION
Heat transfer in internal-combustion engines (A) 961

ENGINES—OIL
"Twin-bank" oil engines (A) 1159

ENGINES—STEAM
Extensible steam engine (A) 1158

ENGLE, M. D.
Martins Creek Steam Electric Station—new ideas to reduce cost of construction and of operation (A) 1160

ERDELYI, E.
Vibration modes of stators of induction motors (A) 285

ERINGEN, A. C.
Response of beams and plates to random loads (A) 286

ERNST, HANS
Awarded ASTE Research Medal for 1957 509

ERNST, J. P.
Design and testing of containment provisions for the engineering test reactor (A) 973

ERWIN, A. E.
Pumps for nuclear power plants (A) 474

ETZEL, FRANZ
The reasons for establishing Euratom ... 558

EUROPE
Recent technical and economic developments in Western Europe ... 27, (D) 592

EUROPEAN SURVEY—Engineering Progress in the British Isles and Western Europe 44, 182, 280, 372, 470, 578, 672, 766, 876, 958, 1058, 1158

EVANS, C. H.
Designing safe installations for inert-gas machines (A) 1170

EVANS, GORDON M.
Obituary 126

EVANS, LEIGH R.
Obituary 422

EXCAVATING MACHINERY
Bucket excavator on crawler track (A) ... 766
Largest walking dragline excavator (A) .. 876

EXTRUSION. *See* METAL EXTRUSION

EZEKIEL, F. D.
Computer representations of engineering systems involving fluid transients (A). 186

EZEKIEL (*continued*)
Effect of conduit dynamics on control-valve stability (A) ... 682
Pressure-flow characteristics of pneumatic valves (A) ... 189

F

FABRICATION. *See* MANUFACTURING

FAIRALL, R. S.
New method of heat-exchanger design with specified inlet and outlet conditions (A) ... 963

FAIRCHILD, F. P.
Eight years of experience with austenitic-steel piping materials at elevated steam conditions (A) ... 290

FARBER, ERICH A.
Effects of junction manufacture on thermocouple EMF generation (A) ... 374
Solar water heating—present practices and installations (A) ... 773

FARR, A. P.
Torque requirements for rotary-shouldered connections and selection of connections for drill collars (A) ... 1064

FARRINGTON, STEPHEN JOHN
Obituary ... 914

FATIGUE OF MATERIALS. *See* METAL FATIGUE

FAULDERS, C. R.
Aerodynamic design of vaned diffusers for centrifugal compressors (A) ... 283

FAUS, H. W.
Effect of improved draft gears and spring-dampened trucks on freight-car shocks (A) ... 380

FAX, D. H.
P. A. R. homogeneous reactor (cond.) ... 242
Pennsylvania advanced reactor—process description (A) ... 1161

FEED-RATE INDICATORS. *See* INSTRUMENTS, MACHINE TOOLS

FEEDERS. *See* MATERIALS HANDLING

FEEDWATER TREATMENT
Evaporated make-up water for a monotube boiler (A) ... 484
Selecting water-treating processes for medium-pressure boilers (A) ... 481
What do modern high-pressure boilers demand of feedwater? (A) ... 480

FELGAR, R. P.
Vibration design charts (A) ... 190

FELLOWSHIPS. *See* EDUCATION

FENG, TSUN-YING
Characteristics of unevenly underlapped four-way hydraulic servo valves (A) ... 588

FENNEMA, T. S.
Practical economics for refinery mechanical engineers (A) ... 47

FERRELL, H.
Investigation of pressure drop through a rotating pipe (A) ... 1062

FERRERIO, PIERO
Obituary (Ed) ... 719
Obituary ... 1010

FIDLER, ISAAC
Obituary ... 530

FIEDLER, G. J.
Criteria for validity of lumped-parameter representation of ducting air-flow characteristics (A) ... 49

FILING SYSTEMS
Standards for filing engineering drawings (A) ... 485

FILMS. *See* HEAT TRANSFER, INDUSTRIAL FILMS

FILTERS. *See* COMMUNICATIONS

FINDLEY, W. N.
Fatigue of metals under combinations of stresses (A) ... 190

FINISHES. *See* COATINGS

FINKE, J.
Design and testing of containment provisions for the engineering test reactor (A) ... 973

FINS. *See* HEAT TRANSFER

FINT. *See* PHYSICAL UNITS

FINZI, LEO
On the principle of Haar and von Karman in statistically determinate problems of plasticity (A) ... 777

FIRE PREVENTION
Fire-and-overheat detector (A) ... 364
Fire safety of engineered timber construction ... 350, (D) 1075

FIRTH, CYRIL
Obituary ... 530

FISHER, H. E.
Study of industrial-engine operation (A) 676

FISHER, I. M.
Discussion of dust suppression in coal handling (A) ... 481

FISHWICK, W.
Chatter of lathe tools under orthogonal cutting conditions (A) ... 774

FITCH, E. C.
Investigation of pressure drop through a rotating pipe (A) ... 1062

FITZGERALD, G. R.
Mechanical-assembly equipment—some economic considerations in its development and use ... 332

FLAMES
Heat transfer by radiation from flames (A) ... 374
Type of flame-excited oscillation in a tube (A) ... 971

FLETCHER, C. NORMAN
Metal-cutting analyses (D) ... 294
Technical ghostwriting (D) ... 975

FLEXIBILITY. *See* PIPING SYSTEMS

FLOTOW, H. E.
UO_2-NaK slurry studies in loops at 600 C (A) ... 472

FLOTURN. *See* METAL FORMING

FLOW OF FLUIDS. *See also* DUST SEPARATORS, FLUID FRICTION, HEAT TRANSFER, PIPELINES, VALVES
Analysis of a process-fluid-flow network by electrical analogy (A) ... 590
Boundary layer along annular walls in a swirling flow (A) ... 968
Computer representations of engineering systems involving fluid transients (A) 186
Control of flow distribution by mixing headers (A) ... 1067
Convection heat transfer and pressure drop of air flowing across in-line tube banks, Parts I and II, (A) ... 291
Criteria for validity of lumped-parameter representation of ducting air-flow characteristics (A) ... 49
Current flow of air, gas-oil, and water in a horizontal pipe (A) ... 384
Effect of adverse pressure gradients on turbulent boundary layers in axisymmetric conduits (A) ... 381
Effect of conduit dynamics on control-valve stability (A) ... 682
Experimental and analytical study of two-component two-phase flow in an ejector with condensation (A) ... 962
Experimental velocity and temperature profiles for air in turbulent pipe flow (A) ... 1071
Heat, mass and momentum transfer in flow through porous media (A) ... 962
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes (A) ... 377
Heat transfer and fluid friction during flow across banks of tubes (A) ... 376
Heat-transfer rates to cross-flowing mercury in a staggered tube bank—II (A) 964
Heat transfer to flow in a round tube with arbitrary velocity distribution (A) ... 965
Heat transfer to fluids with low Prandtl numbers for flow across plates and cylinders of various cross sections (A) ... 1071
Heat transmission to fluids with low Prandtl numbers for flow through tube banks (A) ... 964
Investigation of the end-wall boundary layer of a turbine-nozzle cascade (A) 482
Jet-pump theory and performance with fluids of high viscosity (A) ... 186
Laminar flow over an enclosed rotating disk (A) ... 968
Losses in pipe and fittings (A) ... 185
Method for solving problems of irrotational gas flow by means of high-speed digital computers (A) ... 971
Modes of adiabatic and diabatic fluid flow in an annulus with an inner rotating cylinder (A) ... 964
Momentum and mass transfer by eddy diffusion in a wetted-wall channel (A) 1069
New method to measure Prandtl number and thermal conductivity of fluids (A) 380
Point source and point vortex in the hodograph plane (A) ... 485
Pressure drop and air flow distribution in gas-turbine combustors (A) ... 478
Pressure drop for parallel flow through rod bundles (A) ... 483
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings (A) ... 482

FLOW OF FLUIDS (*continued*)
Skewed boundary-layer flow near the end walls of a compressor cascade (A) ... 377
Study of heat transfer and pressure drop under conditions of laminar flow in the shell side of cross-baffled heat exchangers (A) ... 963
Theoretical analysis of the viscous flow in a narrowly spaced radial diffuser (A) ... 381
Turbulence in small air jets at exit velocities up to 705 feet per second (A) ... 971
Two-dimensional inflow conditions for a supersonic compressor with curved blades (A) ... 381
Two-dimensional, steady, cavity flow about slender bodies in channels of finite breadth (A) ... 381
Two-phase flow in rough tubes (A) ... 968
Unsteady flow of gas through a semi-infinite porous medium (A) ... 885

FLUID FRICTION. *See also* FLOW OF FLUIDS
Gas-friction—heat transfer charts for ducted flows (A) ... 966
Heat transfer and pressure drop in odd-shaped annuli (A) ... 1069

FLY ASH. *See also* DUST COLLECTORS
Fly-ash refiring (A) ... 53

FLYNN, GREGORY, JR.
Million pound high-speed dynamic fatigue-test Machine (A) ... 589

FOGARTY, WILLIAM BAILEY
Obituary ... 914

FOLEY, D. J.
Heat transfer "beyond burnout" for forced-convection bulk boiling (A) ... 768

FOLSOM, R. G.
Nuclear engineering—where do we stand? ... 224, (correction) 593

FOOD PROCESSING
Heat transfer in the food industry ... 922
Recent advances in food technology (D) 390

FOREMAN TRAINING
First-line supervisors . . . how do they spend their time? ... 353

FORGING
Biggest boltmaker (A) ... 951
Spin-forge combines features of vertical spinning lathe with forging process (A). 950

FOSTER, K. M.
Instrumentation and controls, Centralia Water Flood, Illinois (A) ... 1171

FOUNDATIONS
Foundations: design and practice (BR). 976

FOUNDRY PRACTICE
Shell castings—typical examples of their applications ... 560

FOWLER, J. E.
Design features and development of the cross-compound, single flow turbine with axial exhaust—for the Portland Station (A) ... 1163

FRACTURE. *See* METALS, STRESSES AND STRAINS

FRANCK, CLARENCE C., SR.
Biography ... 1206
Eddystone superpressure unit ... 132
Elected Fellow of ASME ... 1206

FRANKLIN, J. B.
Capital's approach to the overhaul and maintenance of the Viscount-installed Rolls-Royce engine (cond) ... 1125

FRASIER, J. T.
Force in the plane of two jointed semi-infinite plates (A) ... 1167

FRATCHER, G. E.
Steel for Canadian pipelines ... 853

FREDHOLD, ALLAN, JR.
Statistical quality control for small plants ... 652

FREE PISTON. *See* COMPRESSORS, ENGINES, GAS TURBINES

FRICTION
Apparent frictional forces of clamping elements as used in the oil industry (A) 385
Coefficients of flat-surface friction ... 1130
Electrical effects accompanying the stick-slip phenomenon in boundary lubrication (A) ... 292
On friction and lubrication at temperatures to 1000 F with particular reference to graphite (A) ... 1165
Properties of friction materials—I. 1. experiments on variables affecting noise (A) ... 886
II. Theory of vibration in brakes (A) 886
Resistance to rolling and sliding (A) ... 682

FRIED, JEROME A.
Obituary ... 530

FRIEDMANN, N. E.
Quasilinear heat flow (A) ... 960

FRISCH, J.
Comparison of semi-empirical solutions for crack propagation with experiments (A) 682
Experimental and theoretical pressures and velocity fields for various lead extrusions (A) 292

FRITZ, W. A., JR.
Heat-transfer studies of naval boilers (A) 965

FROCHT, M. M.
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact (A) 1072

FROELICH, KURT
Sizing of centrifugal separators for residual fuels (A) 677

FROMM, L. W., JR.
Containment for the EBWR (A) 477

FROST, P. D.
Cold extrusion of unalloyed titanium (A) 378

FUEL CELLS
Electricity from gases (A) 1050

FUELS. *See also* COAL, NUCLEAR FUELS, OIL FUEL, POWER PLANTS—NUCLEAR, POWER PLANTS—STEAM
Boron fuels for transonic aircraft and missiles (A) 1047
Burning fluid cake (D) 386
CO boiler pays off in fuel savings and produces zero CO (A) 590
Fuels for the future 552
Fuels—today and tomorrow—the changing pattern of fuel demand 550
Impact of atomic energy on fossil fuels (A) 54
Industrial fuel utilization in the United Kingdom (A) 53
Multifuel firing of cyclone furnaces (D) 193
Nuclear briefs (A) 668
Progress report—Ignitibility of solid fuels and burning rates of fixed carbon (A) 53
Pulp-and-paper-mill trends toward integrating power and bark-burning boilers (A) 583
Relative demand for fuels 550
Sizing of centrifugal separators for residual fuels (A) 677
Utilization of lignite; a comparison between spreader-stoker and pulverized-lignite firing in steam generation 23, (D) 888

FULLER, DUDLEY D.
Receives ASLE National Award 601
Self-excited vibrations of an air-lubricated thrust bearing (A) 1163

FUMES. *See* AIR POLLUTION

FURNACES. *See also* INDUSTRIAL FURNACES, SOLAR ENERGY
Arc-image furnace (A) 1049
Multifuel firing of cyclone furnaces (D) 193
Radiant heat exchange in a gas-filled enclosure (A) 1069

FURNITURE. *See* WOODWORKING MACHINERY

G

GAGES
Beta radiation gages control thickness and weight in manufacturing processes (A) 669
X-ray thickness gage for steel strip mills (A) 667

GARDNER, LESTER DURAND
Obituary 326

GAS CLEANERS. *See* ELECTRICAL PRECIPITATORS

GAS LIQUEFICATION
Expansion engine for gas liquefication (A) 870

GAS-LIQUID MIXTURES
Application of gas/liquid cyclones in oil refining (A) 385

GAS LUBRICATION. *See* BEARINGS

GAS TURBINES. *See also* AIRPLANE ENGINES, GUIDED MISSILES, IRON AND STEEL MANUFACTURE, LOCOMOTIVES—GAS-TURBINE, SUPERCHARGERS
Air and gas duct system for the gas-turbine vessel John Sergeant (A) 284
Analytical methods for performance estimates of free-piston gasifiers (A) 582
Bibliography on free-piston engines and compressors 339

GAS TURBINES (*continued*)
Coal-burning gas turbine (A) 572
Compact gas turbine (A) 357
Design features of new 16,500-kw gas turbines for power generation (A) 581
Designing the marine gas turbine 860
Determination of turbine-stage performance for an automotive power plant (A) 580
Dynamic response characteristics of gas turbines (A) 1166
Economic aspects of combustion gas turbine application in the refining industry (A) 1066
40-ft personnel boat with gas-turbine propulsion-engine installation features and operating experience (A) 284
Free-piston-turbine tractor (A) 460
Gas-turbine generating experience of West Texas Utilities Company (A) 580
Gas turbines for the chemical industry (A) 582
General design considerations for smaller gas turbines (A) 1165
Generalized presentation of gas-turbine combustor performance (A) 581
Influence of working-fluid characteristics on the design of the closed-cycle gas turbine (A) 580
New concept in engine gas-generator-turbine plant (A) 478
New single-shaft 3000-hp gas turbine ideal for mechanical drive application (A) 581
Nuclear powered gas turbines for light weight power plants (A) 476
Operating considerations in the application of gas-turbine-driven centrifugal pipeline compressors (A) 46
Pressure drop and air flow distribution in gas-turbine combustors (A) 478
Shipboard gas-turbine engine tests 1119

GASES. *See also* COOLING SYSTEMS, FLOW OF FLUIDS, FLUID FRICTION
Design of supersonic expansion nozzles and calculation of isentropic exponent for chemically reacting gases (A) 376
Gas dynamics. Vol. I, applied mathematics and mechanics (BR) 688
Viscosity of five gases: a re-evaluation (A) 187

GAYLORD, E. W.
On the theoretical analysis of a dynamic thermocouple (A) 291

GAYNOR, J.
Electrical effects accompanying the stick-slip phenomenon in boundary lubrication (A) 292

GAZIS, D. C.
Influence of width on velocities of long waves in plates (A) 885

GAZLEY, C., JR.
Heat-transfer characteristics of the rotational and axial flow between concentric cylinders (A) 375

GEARS
Experimental determination of gear tooth stresses in large marine gears (A) 290
Gears—a digest of 1956 literature 844
Undercutting of spur gear teeth (A) 589
Use of high-speed computers in the design and appraisal of helical gears (A) 489

GEERS, JOSEPH F.
Obituary 218

GENSMAN, L. R.
Remote-control systems for setting sawmill carriages (A) 883

GEOPHYSICS
International Geophysical Year (Ed) 535

GERARD, GEORGE
Photothermoelasticity: an exploratory study (A) 973

GERBER, L.
Standards for filing engineering drawings (A) 485

GERBER, R. C.
Sodium-graphite reactor (cond.) 245

GERMANY
German Industries Fair at Hanover (A) 672

GETHEN, GEORGE SETMAN
Obituary 530

GEYER, HENRY ELMER
Obituary 126

GHABRIAL, S. R.
Impact stresses in drop-hammer guides (A) 588

GIBBS, WILLIAM FRANCIS
Biography 68
Honorary Member of ASME 68

GILBERT, A. C.
Photothermoelasticity: an exploratory study (A) 973

GILBERT, J. B.
Design features of a gas turbine for a supercharged boiler (A) 1166

GILBERT, R.
Two-dimensional, steady, cavity flow about slender bodies in channels of finite breadth (A) 381

GILBERT, W. W.
Biography 71
Receives Blackall Machine Tool and Gage Award 71

GILBRETH, LILLIAN M.
Honored at testimonial dinner 206

GILLMOR, REGINALD E.
Biography 1207
Elected Fellow of ASME 1207

GILSONITE. *See* SLURRIES

GLASS, HARTWELL DOSS
Obituary 530

GLASS. *See also* WINDSHIELDS
Pyroceram; new family of basic materials (A) 662

GLASSER, T. H.
Basic equations for predicting performance of a nuclear power plant pressurizer (A) 473

GLICKSTEIN, M. R.
Effects of junction manufacture on thermocouple EMF generation (A) 374

GOLD. *See* METAL COATING

GOLDMAN, J. L.
Offshore mobile units (A) 1075

GOLDSMITH, WERNER
Elongating string under the action of a transverse force (A) 883
Stresses in beams during transverse impact (A) 970

GOLF SHOTS. *See* DYNAMICS

GOMBERG, H. J.
Use of ionizing radiations in control of parasitic infections (A) 477

GONZALEZ, EDUARDO DAMASO
Obituary 826

GOOD, CHARLES WINFRED
Obituary 126

GOODMAN, L. E.
Thermal drift of floated gyroscopes (A) 1072

GOODWIN, J. G.
Back extrusion of heavy-walled Zircaloy-2 cups (A) 590, 936

GORDON, D.
Techniques of drawing in the third dimension (A) 588

GOSMAN, A. L.
Promotion of dropwise condensation of several pure organic vapors (A) 583

GOSS, WYMAN
New materials that the design engineer should know about—plastics and rubbers 727

GOULD, A. F.
Materials in motion 1116

GOULD, S. E.
Use of ionizing radiations in control of parasitic infections (A) 477

GOVERNORS. *See* AUTOMATIC CONTROL

GRAM, A. J., JR.
Convection heat transfer and pressure drop of air flowing across in-line tube banks, Part II (A) 291

GRANT, TAYLOR BANKER
Obituary 530

GRAPHICAL METHODS
Abacs or nomograms (BR) 99
Alignment diagrams (D) 492
Graphical versus computer techniques—for mechanism analysis (A) 383
How to analyze the cost of machine tools (D) 391
New method for the construction of Hencky-Prandtl nets (A) 485

GRAPHITE
"*Production and properties of graphite for reactors*"; a recently published booklet 604

GREASES. *See* LUBRICANTS

GREELEY, SAMUEL A.
Background of design criteria for municipal incinerators (AC) 390

GREEN, H. M.
Isoelasticity in gyro rotor bearings (A) 1164

GREEN, L., JR.
Heat, mass and momentum transfer in flow through porous media (A) 962

GREEN, PARKER MALCOLM
Obituary 126

GREENMAN, EDWIN GARDNER
Obituary 218

GREGG, J. L.
Similar solutions for free convection from a nonisothermal vertical plate (A) ... 881

GREGORY, A. T.
Evolution of a small turbojet (A) 283

GRENSTED, P. E. W.
Analysis of the transient response of nonlinear control systems (A) 586

GRIFFITH, PETER
Bubble growth rates in boiling (A) 961
Correlation of nucleate boiling burnout data (A) 962

GRINDING
Analysis of residual stress in ground surfaces of high-temperature alloys (A) .. 774
Experimental study on chatter vibrations in grinding operations (A) 378
Influence of various grinding conditions upon residual stresses in titanium (A) . 479
On the basic mechanics of the grinding process (A) 378
Perpetual form control of grinding wheels (A) 868

GROB, J. J.
Multifuel firing of cyclone furnaces (D) . 193

GROBEL, L. P.
Investigation of the generator rotor burst at the Pittsburgh Station of the Pacific Gas and Electric Company (A) 1162

GROBMAN, J. S.
Pressure drop and air flow distribution in gas-turbine combustors (A) 478

GRONEMEYER, F. C.
Sodium-graphite reactor (cond.) 245

GROSH, R. J.
Heat transfer to fluids with low Prandtl numbers for flow across plates and cylinders of various cross sections (A) . 1071
Heat transmission to fluids with low Prandtl numbers for flow through tube banks (A) 964

GROSS, W. A.
Beams of uniform strength subjected to uniformly distributed loading (A) .. 380

GROVER, H. J.
Some suggestions for research in diaphragm technology (A) 487

GRUBER, A. R.
Control of flow distribution by mixing headers (A) 1067

GUDHEIM, A. R.
Heat transfer in thin-film, centrifugal processing units (A) 1070

GUIDED MISSILES
Guided missiles call for airborne auxiliary power systems for purposes other than propulsion 733
Missile auxiliary power-supply development (A) 969

GUILINGER, W. H.
Effect of heat conductance on slider-bearing characteristics (A) 776

GUNNELL, BRUCE C.
Atomic-powered locomotive? 266

GURNEY, W. B.
Information center with automatic logger and scanner (A) 483

GYROSCOPES
Gyroscopes for inertial navigators 832
Isoelasticity in gyro rotor bearings (A) . 1164
Thermal drift of floated gyroscopes (A) . 1072

H

HAAGEN-SMIT, A. J.
Studies on air-pollution control by Southern California Edison Company (A) 773

HABACH, G. F.
Control of the engineering functions in a decentralized company (A) 584

HAEFELE, DONALD G.
Nonintermittent film projector 345

HAENTJENS, OTTO
Obituary 714

HAGAMAN, H. M.
Sodium-graphite reactor (cond.) 245

HAGE, W. T.
Application of automatic digital-data-collecting to boiler testing 1016
Automatic digital-data-collecting system for use in central stations (A) 772

HAGEL, W. C.
Specific damping energy of fixed-fixed beam specimens (A) 972

HAGGERTY, CHARLES
Obituary 626

HAINES, ROGER W.
Solar heat for a building 536

HALL, A. S., JR.
Resistance to rolling and sliding (A) 682

HALL, WALTER ATWOOD
Obituary 126

HALLIDAY, JOHN
Boiler vibration caused by combustion gas flow (A) 290

HALLMAN, CHARLES
Obituary 1010

HALVERSTADT, R. D.
Analysis of residual stress in ground surfaces of high-temperature alloys (A) 774

HAM, I.
Ceramic and carbide tool performance tests (A) ... Part I, 184; Part II, 967

HAMILTON, DOUGLAS THOMAS
Obituary 1214

HAMMITT, F. G.
Nuclear powered gas turbines for light weight power plants (A) 476

HANRAHAN, FRANK J.
Fire safety of engineered timber construction 350, 1075

HANSCOM, WILLIAM WALLACE
Obituary 326

HANSEN, JOHANNES PETER
Obituary 1106

HANSON, K. L.
The sector problem (A) 776

HANSSEN, A. J.
Application limits and accuracies of control-valve flow coefficient CV (A) 49

HANTSCH, ROBERT SIEGFRIED
Obituary 326

HARBIN, CHARLES B.
Obituary 422

HARDER, K. C.
Engineers study administration (A) 485

HARDGROVE, R. M.
Burning fluid coke (D) 386

HARDING, B. L.
Proposed standardized system for notation and classification of the four-bar linkage (A) 1169

HARDNESS. *See* METAL TESTING

HARDY, J. D.
Measurement of the heating of the skin during exposure to infrared radiation .. 1033

HARLOW, J. H.
Engineering the Eddystone Plant for 5000 psig, 1200-F steam (cond.) 132

HARRIS, T. J.
Airfreight sales development (A) 384

HARRIS, WILLIAM J., JR.
Titanium-sheet-rolling program 1112

HARRISON, EDWIN DAVIES
Named president of Georgia Institute of Technology 1182

HARRISON, W. B.
Combined free and forced convection in a constant-temperature vertical tube (A) 965
Wetting effects on boiling heat transfer—the copper-stearic acid system (A) 1068

HARRISS, C. LOWELL
Metal-cutting analyzes (D) 294

HARTNETT, J. P.
Experimental studies of free-convection heat transfer in a vertical tube with uniform wall heat flux (A) 377
Measurements of the total absorptivity for solar radiation of several engineering materials (A) 880
Review of heat-transfer literature—1956 433
Total normal emissivity measurements for porous materials used for mass-transfer cooling (A) 1071

HASS, H. B.
Recent advances in food technology (D) . 390

HATCH, T. F.
Human factor in machine design (A) 288

HATCHER, N. C., JR.
Finishing controls at Drexel Furniture Company (A) 679

HAUSER, G. B.
Expanding use of aluminum in railroad cars (A) 674

HAWKINS, M. B.
Engineering approach to radiological contamination 920

HAWLEY, C. FREEMAN
Utilization of lignite; a comparison between spreader-stoker and pulverized-lignite firing in steam generation ... 23, 890

HAYNES, J. L.
"Roller freight" needs better trucks (A) 675

HAYS, LEWIS TOMPKINS
Obituary 218

HEALD, ROY H.
Awarded Department of Commerce Silver Medal for Meritorious Service 815

HEAPS, H. S.
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate (A) 885

HEAT ANALOGY
Effectiveness of stub fins as determined by the Teledeltos paper analog (A) 960

HEAT-EXCHANGE EQUIPMENT. *See also* HEAT TRANSFER
Dynamic response of heat exchangers having internal heat sources (A) ..... Part I, 880; Part II, 963
New method of heat-exchanger design with specified inlet and outlet conditions (A) 963
Performance factors of a periodic-flow heat exchanger (A) 882
Problems encountered in the selection and use of air-cooled, heat-transfer equipment (A) 47
Shell-side characteristics of shell-and-tube heat exchangers (A) 375

HEAT-INSULATING MATERIALS
Silicone insulation (A) 365
Thermal conductivity of insulating materials for use in nuclear reactors (A) 1071
Versatile nylon batting (A) 568

HEAT TRANSFER. *See also* BIOLOGY, HEAT - INSULATING MATERIALS, INSTRUMENTS—TEMPERATURE
Bibliography 442
Combined free and forced convection in a constant-temperature vertical tube (A) 965
Compilation of radiation shape factors for cylindrical assemblies (A) 374
Convection heat transfer and pressure drop of air flowing across in-line tube banks, Parts I and II (A) 291
Convective heat transfer from high-temperature air inside a tube (A) 1070
Effect of heat conductance on slider-bearing characteristics (A) 776
Experimental studies of free-convection heat transfer in a vertical tube with uniform wall heat flux (A) 377
Experimental velocity and temperature profiles for air in turbulent pipe flow (A) 1071
Extended heat-transfer surface (A) 1054
Film boiling from vertical tubes (A) 1070
First National ASME-AIChE Heat Transfer Conference 696
Free convection from heated surfaces—laminar boundary layers (A) 583
Gas-friction—heat transfer charts for ducted flows (A) 966
Heat, mass, and momentum transfer in flow through porous media (A) 962
Heat transfer—topic of joint ASME-AIChE conference 996
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrices (A) 377
Heat transfer and fluid friction during flow across banks of tubes (A) 376
Heat transfer and pressure drop in odd-shaped annuli (A) 1069
Heat transfer between a flat plate and a fluid containing heat sources (A) 880
Heat transfer between fluidized solids beds and boundary surfaces—correlation of data (A) 1070
Heat transfer "beyond burnout" for forced-convection bulk boiling (A) 768
Heat transfer by radiation from flames (A) 374
Heat-transfer characteristics of the rotational and axial flow between concentric cylinders (A) 375
Heat-transfer considerations in the use of organic reactor coolants (A) 473
Heat-transfer effects in hydrostatic thrust bearing lubrication (A) 51
Heat transfer from a rotating cylinder with and without cross flow (A) 187
Heat transfer from a rotating disk in turbulent flow (A) 375

HEAT TRANSFER (*continued*)
Heat transfer from superheated vapors to a horizontal tube (A) 1068
Heat transfer in internal-combustion engines (A) 961
Heat transfer in liquid metals (A) 965
Heat transfer in the food industry 922
Heat transfer in thin-film, centrifugal processing units (A) 1070
Heat-transfer rates to cross-flowing mercury in a staggered tube bank—II (A). 964
Heat-transfer studies of naval boilers (A) 965
Heat transfer to flow in a round tube with arbitrary velocity distribution (A) 965
Heat transfer to fluids with low Prandtl numbers for flow across plates and cylinders of various cross sections (A). 1071
Heat transfer to laminar boundary layers with variable free-steam velocity (A) 376
Heat transfer to lead-bismuth in turbulent flow in an annulus (A) 187
Heat transfer to supercritical water (A).. 963
Heat transmission to fluids with low Prandtl numbers for flow through tube banks (A) 964
Horizontal condenser theory—Part I, Mathematical development of tube loading (A) 1068
Investigation of burnout heat flux in rectangular channels at 2000 psia (A) 881
Laminar mass and heat transfer from ellipsoidal surfaces of fineness ratio 4 in axisymmetrical flow (A) 880
Man and his thermal environment 1029
Model method for determining geometric factors in solid-to-solid radiation heat transfer (A) 880
Natural convection heat transfer in regions of maximum fluid density (A).. 1068
New finite-difference technique for solution of the heat-conduction equation, especially near surfaces with convective heat transfer (A) 290
New method to measure Prandtl number and thermal conductivity of fluids (A). 380
On the stability of boiling heat transfer (A) 962
On the stagnation of natural-convection flows in closed-end tubes (A) 881
Prediction of journal-bearing temperatures by the application of heat-transfer theory and data (A) 775
Promotion of dropwise condensation of several pure organic vapors (A) 583
Quasilinear heat flow (A) 960
Radiant heat exchange in a gas-filled enclosure (A) 1069
Rate of temperature change of simple shapes (A) 291
Review of heat-transfer literature—1956 433
Similar solutions for free convection from a nonisothermal vertical plate (A) 881
Simplified method for the study of two-dimensional transient heat flow using resistance paper (A) 583
Study of heat transfer and pressure drop under conditions of laminar flow in the shell side of cross-baffled heat exchangers (A) 963
Sublimation from disks to air streams flowing normal to their surfaces (A)... 291
Theoretical analysis of heat transfer in natural convection and in boiling (A).. 187
Total normal emissivity measurements for porous materials used for mass-transfer cooling (A) 1071
Transient air temperatures in a duct (A) 186
Transient free convection from a vertical flat plate (A) 881
Transient heat flow determination of the thermal properties of clay (A) 377
Velocity, temperature, and heat-transfer measurements in a turbulent boundary layer downstream of a stepwise discontinuity in wall temperature (A). 485
Wetting effects on boiling heat transfer—the copper-stearic acid system (A).... 1068

HEAT TRANSFER AND FLUID MECHANICS INSTITUTE
1957 papers available 791

HEAT TREATMENT. *See also* INDUSTRIAL FURNACES
Hardening during machining cycle (A) 579
Steam atmosphere heat-treating (A).... 274

HEATERS. *See* AIR HEATERS

HEATH, F. R.
Designing jet engines with a medium-size digital computer (A) 383

HEATING. *See also* HIGH-TEMPERATURE RESEARCH, SOLAR ENERGY
Nuclear district heating (A) 1054

HECHLER, F. G.
Obituary 422

HEFNER, B. H.
Advances in diesel-electric rig design for oil well drilling (A) 1170

HEIDEL, CHARLES M.
Enrico Fermi fast-breeder reactor (cond.) 240

HEINEMAN, A. H.
Containment for the EBWR (A) 477

HEISLER, M.
Design and development of the coolant system for the sodium reactor experiment (A) 472

HELICOPTERS
Jet helicopter 564

HELMSTAEDTER, WILLIAM E.
Obituary 422

HEMKE, PAUL E.
Appointed vice-president and provost of RPI 1182

HENDERSON, DOUGLAS
Obituary 1214

HENDERSON, E. N.
Gas pulsations—the problem, Southern Gas Association's approach, and results (A) 676

HENDLER, E.
Measurement of the heating of the skin during exposure to infrared radiation.. 1033

HENRIKSON, OSCAR WILHELM
Obituary 530

HENRY, S. L.
Steel for Canadian pipelines 853

HENRY, W. P., JR.
Shipboard gas-turbine engine tests 1119

HERRINGTON, L. P.
Biotechnical problem of the human body as a heat exchanger ..... (A) 881, 1029

HERRON, D. P.
Prospects for economic atomic power (A) 770

HERSEY, M. D.
Testing dynamically loaded bearings
I, A short history of bearing test machines (A) 52
II, A diesel-engine bearing test machine (A) 51

HERWICK, JOHN SHERMAN
Obituary 1106

HESLOP, PAUL LOVERIDGE
Obituary 826

HEWITT, EDWARD RINGWOOD
Obituary 530

HIGGINS, NATHAN BERT
Obituary 530

HIGH-TEMPERATURE MATERIALS. *See also* BOLTS AND NUTS, STEEL ALLOYS
Boron 1200-F 75,000-psi alloy (A) 360
Development of ceramic insulating materials for high-temperature use (A) 961
The hot airplane 925
Improved impact resistance for cermets (A) 1055
Iron-base 1500-F 15,000-psi alloy (A).... 360
New materials that the design engineer should know about 720
Pyroceram; new family of basic materials (A) 662

HIGH-TEMPERATURE RESEARCH
Atomic vapor produced by using the highest technically useful temperatures yet achieved (A) 567
Dynamic response of beams and plates to rapid heating (A) 970
Simulating the "thermal barrier" (A)... 1048
Solar furnace (D) 386

HIJAB, W. A.
Statistical appraisal of the Prot method for determination of fatigue endurance limit (A) 382

HILL, ROSS C.
Gas-turbine maintenance in severe service 639

HINES, J. D.
Turbocharging development for loop-scavenged two-cycle gas engines (A).. 678

HINRICHS, C.
Development of a universal type control drive mechanism for nuclear reactors (A) 475

HINSHAW, J. R.
Histolic studies of some reactions of skin to radiant thermal energy 1035

HIRSCHHORN, J.
Synthesis of four-bar mechanisms by the method of components (A) 287

HISTORY
The first one hundred and fifty years: a history of John Wiley & Sons (BR).. 594
Metal-cutting analyses of the past hundred years (D) 294
Tercentenary of the pendulum clock (A) 182

HLINKA, J. W.
Rate of temperature change of simple shapes (A) 291

HOCHSCHILD, E. F.
Dynamic study of an experimental pneumatic process-pressure transmitter (A) 587

HODGE, P. G., JR.
Interaction curves for shear and bending of plastic beams (A) 884
Yield loads of slabs with reinforced cutouts (A) 382

HOFF, N. J.
Buckling of thin cylindrical shell under hoop stresses varying in axial direction (A) 970

HOFFMAN, H. T.
Application of automatic digital-data-collecting to boiler testing 1016
Automatic digital-data-collecting system for use in central stations (A) 772
Discussion of an application of automatic digital-data-collecting system to boiler testing (A) 772

HOFFMAN, T. E.
Linear force-input, pneumatic amplifier with fast response characteristics (A).. 585

HOISTING MACHINERY
"Hercules of railway cranes" (A) 673
One-man hydraulic crane (A) 950

HOLDUP, E. D.
Sound methods of solid fuel evaluation for use in thermal power stations (A).. 1169

HOLL, J. W.
Effect of adverse pressure gradients on turbulent boundary layers in axisymmetric conduits (A) 381

HOLLISTER, SOLOMON CADY
Biography 69
Honorary member of ASME 69

HOLMES, B. A.
Progress report on standardization of the vibratory-cavitation test (A) 185

HOLSTED, R. A.
Young engineer in a small company 524

HOLSTEIN, E. D.
Two-phase concurrent flow of liquids and air through inclined pipe (A) 1062

HOLZ, H. B.
Sodium-graphite reactor (cond.) 245

HONEBRINK, ROGER W.
Professional development for the young engineer 1093

HONORS AND AWARDS
AICE Award of Merit 101, 1181
American Rocket Society Awards 102
ASLE National Award 601
ASME Gas Turbine Power Award 904
ASME honors engineers 68
ASME Medal 69
ASTE Awards 509
Blackall Machine Tool and Gage Award. 71
First Karl Taylor Compton Gold Medal. 1184
Elliott Cresson Medal 1181
Charles B. Dudley Medal 1181
Edison Medal 107, 416
Egleston Medal 398
First Gantt Citation 1183
Gauss Medal 1181
Heyn Medal 1181
Alfred E. Hunt Memorial Medal 601
Industrial Research Institute Medal.... 1188
John J. Jeffries Award 304
Kelvin Medal 601
Lamm Gold Medal 398
Lincoln Gold Medal 601
Robert M. Losey Award 304
Charles T. Main Award 73
Samuel Wylie Miller Memorial Award... 601
NCSBEE Distinguished Service Certificate 1182
Pi Tau Sigma Gold Medal Award 72
Priestley Medal 206
Priestley Memorial Award 507
Prime Movers Committee Award 73
Sylvanus A. Reed Award 304
Richards Memorial Award 72
Royal Aeronautical Society Gold Medal. 815
Elmer A. Sperry Award 1186
Lawrence A. Sperry Award 304
Richard L. Templin Award 1181
Trinks Industrial Heating Award 1181
Undergraduate Student Award 74

HONORS AND AWARDS (*continued*)
William H. Walker Award 1182
Worcester Reed Warner Medal 70
Washington Award 601
Westinghouse Gold Medal 70
Williston Award 71
Wright Brothers Memorial Trophy . 107, 206

HOPKINS, W. E.
S..tion design considerations in evaluating selection of fuels (A) 583

HOPPMANN, W. H., II
Nodal patterns of the free flexural vibrations of stiffened plates (A) 972

HORGEN, H.
French experience with free-piston engines 428

HORVAY, G.
Saint Venant's principle: a biharmonic eigenvalue problem (A) 884
The sector problem (A) 776
Some mixed boundary-value problems of the semi-infinite strip (A) 485
Vibration modes of stators of induction motors (A) 285

HOSKINS, CHARLES HOWARD
Obituary 714

HOTTEL, H. C.
Radiant heat exchange in a gas-filled enclosure (A) 1069

HOUSE, R. N., JR.
Displacements in a wide curved bar subjected to pure elastic-plastic bending (A) 884

HOWE, E. D.
Vacuum flash distillation of sea water (A) 878

HOWE, RICHARD J.
Offshore mobile units—present and future ..... (A) 48, 335

HOWSON, LOUIS R.
Elected president of ASCE 1183

HOYT, P. R.
Dynamic field tests of a process furnace (A) 586
Dynamic field tests of a steam turbine (A) 586

HSU, Y. Y.
Film boiling from vertical tubes (A) 1070

HUBER, O. J.
Cold extrusion of unalloyed titanium (A) 378

HUGHES, BURTON S.
Obituary 626

HUGHES, CHESTER DEWITT
Obituary 530

HUGHES, G. W.
Trifilar pendulum and its application to the experimental determination of moments of inertia (A) 969

HUGHES, W. F.
Heat-transfer effects in hydrostatic thrust bearing lubrication (A) 51
On the theoretical analysis of a dynamic thermocouple (A) 291

HUMAN ENGINEERING
Human factor in machine design (A) 288

HUNSAKER, JEROME C.
Receives gold medal of the Royal Aeronautical Society 815

HUNT, HORACE SINCLAIR
Obituary 326

HUNTINGTON, R. L.
Current flow of air, gas-oil, and water in a horizontal pipe (A) 384
Two-phase concurrent flow of liquids and air through inclined pipe (A) 1062

HUPPER, H. J.
In-service washing to Ljungstrom air preheaters on pulverized-coal-fired steam generators (A) 380

HUR, J. J.
Selection of materials for construction of catalytic reforming units (A) 47

HURWICZ, H.
Heat processing of foods 922
Heat transfer in canning 924

HUSTE, A.
Spray-dryer design calculations (A) 590

HUTH, J. H.
Some new data on high-speed impact phenomena (A) 285

HUTTER, E.
EBR-II control system (A) 476

HYDRAULIC CONTROL. *See* VALVES

HYDRAULIC DRIVES
Hydraulic torque converters 738
Reducing power consumption in hydraulic circuits (D) 495

HYDRAULIC TURBINES
Cavitation in water turbines (A) 45

HYDRAULICS
Freeman Fellowships available in 1957, for study or research in hydraulics 118

HYDRODYNAMICS. *See also* LUBRICATION
Fluid dynamic theory of gas-lubricated bearings (A) 52

HYDROSTATIC TESTING
General instability of a ring-stiffened, circular cylindrical shell under hydrostatic pressure (A) 383
Steel for Canadian pipelines 853

HYMAN, S. C.
Control of flow distribution by mixing headers (A) 1067

I

IGNITION. *See also* COMBUSTION
Practical EnginScope for field maintenance (A) 677

ILLINGWORTH, R. H.
Preventive maintenance plan for gas-products plants and related operations (A) 771

IMPACT. *See also* STRESSES AND STRAINS, WAVE MECHANICS
Some new data on high-speed impact phenomena (A) 285
Stresses in beams during transverse impact (A) 970

IMPELLERS
Experimental study of centrifugal-pump impellers (A) 186
Measurements of relative flow distribution in mixed-flow impellers (A) 283

INCLUSIONS. *See* METALLURGY

INDUCTION HEATING
60-cycle induction heating of sodium systems (A) 473

INDUSTRIAL ENGINEERING
Industrial engineering—a definition and forecast (D) 495

INDUSTRIAL FILMS. 403, 605, 694, 797, 1191

INDUSTRIAL FURNACES
Dynamic field tests of a process furnace (A) 586
Furnace-charging machines (A) 758
Gas carburizing furnace (A) 372
Roller-hearth furnace for heat-treating large aluminum-alloy extrusions (A) .. 359
Vacuum remelting furnace (A) 759

INDUSTRIAL HAZARDS
Low-velocity test gun for testing of lenses against small projectiles (A) 569
Toxicity of materials—of interest to the mechanical engineer (A) 287

INDUSTRIAL TRAINING. *See also* MANAGEMENT
Development of engineering managers through planned education and training 741

INDUSTRIAL TRUCKS
Fork truck stability—a study in moments (A) 379

INDUSTRIAL WASTES
Effect of heated condenser discharge upon aquatic life (A) 1160

INDUSTRY. *See also* ORGANIZATION
Control of research and development to meet company objectives (A) 584
Government support urged in industry standards for goods and services 597
The next hundred years (BR) 1174
U.S. industry (D) 294
Why is U. S. industry strong? (D) 592

INERT GAS. *See* PETROLEUM INDUSTRY

INERTIA. *See* APPLIED MECHANICS, LUBRICANTS AND LUBRICATION

INERTIAL NAVIGATION. *See* AIRPLANE INSTRUMENTS, GYROSCOPES

INFORMATION RETRIEVAL
Systems for information retrieval symposium 600

INFRARED
Infrared versus radar (A) 763
Opaque windows for infrared (A) 763

INSPECTION
Ultrasonic detection of thin laminar inclusions (A) 1161

INSTITUTION OF MECHANICAL ENGINEERS
Calendar of meetings 600, 695, 906

INSTRUMENTS. *See also* AUTOMATIC CONTROL, ENGINE ANALYZERS, METALLOGRAPHY, OPTICAL INSTRUMENTS
Application of automatic digital-data-collecting to boiler testing 1016
Automatic digital-data-collecting system for use in central stations (A) 772
Determination of turbine-stage performance for an automotive power plant (A) 580
Development of the Natco feed-rate indicator (A) 589
Developments in the analysis of maintenance problems 931
Discussion of an application of automatic digital-data-collecting system to boiler testing (A) 772
Encyclopedia of instrumentation for industrial hygiene (BR) 783
High-precision vernier resolver (A) 1152
IRE, ISA, AIChE participate in fourth annual IRE-ASME conference program 1195
Instrument readability improved (A) ... 574
Instrumentation and controls, Centralia Water Flood, Illinois (A) 1171
Mechanical Btu meter (A) 761
Moisture-content gage (A) 1050
Privately owned Standards Laboratory for testing master gages and master electrical instruments (A) 869
"Sneaky peeky"; cystoscope used to examine points of limited access (A) ... 34
Some dynamics of the golf shot (A) 587
Technical memoranda, Instruments & Regulators Division (A) 486
Trifilar pendulum and its application to the experimental determination of moments of inertia (A) 969

INSTRUMENTS—PRESSURE
Description of a new sensitive micromanometer (A) 881
Dynamic study of an experimental pneumatic process-pressure transmitter (A) 587
Metal bellows for many uses (A) 573

INSTRUMENTS—TEMPERATURE. *See also* AUTOMATIC CONTROL
Designing thermocouples for response rate (A) 580
Effect of junction manufacture on thermocouple EMF generation (A) 374
Estimation of temperature patterns in multiply shielded systems (A) 376
Experimental measurement of metal-cutting temperature distributions (A) .. 774
Fast-response thermocouples using tubular hot-junction elements (A) 879
Influence of gradient temperature fields on thermocouple measurements (A) ... 960
On the theoretical analysis of a dynamic thermocouple (A) 291
Tool-work-thermocouple compensating circuit (A) 479

INSTRUMENTS—VIBRATION
Progress report on standardization of the vibratory-cavitation test (A) 185

INSTRUMENTS—VISCOSITY
Corrections for the oscillating-disk viscometer (A) 381

INTERNATIONAL ELECTROTECHNICAL COMMISSION
Moscow meeting, 1957 895

INTERNATIONAL RELATIONS
The engineer's working relations abroad ..... 432, (D) 1173
Inter-American manufactured products and raw materials standards on way ... 1085

INVESTMENT CASTING. *See* DIE CASTING

IP, CHING-U
Simple formula for determining the position of maximum slider velocity in a slider-crank mechanism (A) 589

IRON AND STEEL INDUSTRY. *See also* GAGES
Steel capacity record (A) 366

IRON AND STEEL MANUFACTURE
Blast-furnace gas-turbine blower (A) 572
500-ton ladle cranes for steel mill (A) 359
Oxygen-enriched blast (A) 757
Punch-card-controlled steel mill (A) 271
250-ton ladles for Scottish steelworks (A) 1059

IRVINE, T. F., JR.
Description of a new sensitive micromanometer (A) 881
New method to measure Prandtl number and thermal conductivity of fluids (A). 380
Review of heat-transfer literature—1956. 433
Total normal emissivity measurements for porous materials used for mass-transfer cooling (A) 1071

IRWIN, G. R.
Analysis of stresses and strains near the end of a crack traversing a plate (A) 973

IRWIN, L. K.
Receives Richard L. Templin Award.... 1181

ISBIN, H. S.
Natural convection heat transfer in regions of maximum fluid density (A).. 1068

J

JACKET, H. S.
Investigation of burnout heat flux in rectangular channels at 2000 psia (A).. 881

JACKSON, R. L.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines (A)... 483

JACKSON, T. W.
Combined free and forced convection in a constant-temperature vertical tube (A)..... 965

JACOBS, H. I.
Body cooling and hand cooling..... 1032

JACOBSON, E. W.
Member of 1957 ASME Council..... 94

JACOBSON, JOSEPH WILLIAM
Metallurgical yield-stress observation by means of stressing metallograph... 13
Receives Old Guard Prize..... 74

JAEGER, JERALD FRANCIS
Obituary..... 826

JAPAN
Japan Society of Automatic Control receives ASME scroll..... 789

JARDH, WILHELM
Obituary..... 826

JAROSS, R. A.
5000-gpm electromagnetic and mechanical pumps for the EBR-II sodium system (A)..... 474
60-cycle induction heating of sodium systems (A)..... 473

JAY, R. D.
Fork truck stability—a study in moments (A)..... 379

JEFFRIES, ROBERT J.
Elected president of ISA..... 1183

JENKINSON, J. R.
Low-temperature deposits and corrosion in boilers (A)..... 481

JENNINGS, B. H.
Bibliography on free-piston engines and compressors..... 339

JET PROPULSION. *See* AIRPLANE ENGINES, HELICOPTERS

JET PUMPS
Control of steam-jet vacuum pumps (A). 1169

JETS. *See* FLOW OF FLUIDS

JEWETT, ARTHUR CRAWFORD
Obituary..... 1214

JIMBO, HISAO
Investigation of the interaction of windage and leakage phenomena in a centrifugal compressor (A)..... 482

JOHANNES, C.
Heat transfer and pressure drop in odd-shaped annuli (A)..... 1069

JOHNSON, A. J.
Evaluating coal by utilization cost (A)... 383

JOHNSON, D. S.
Velocity, temperature, and heat-transfer measurements in a turbulent boundary layer downstream of a stepwise discontinuity in wall temperature (A).... 485

JOHNSON, E. S.
Automatic machining in furniture manufacture (A)..... 678

JOHNSON, J. A.
Rail highway co-ordination (A)..... 675

JOHNSON, L. G.
Use of high-speed computers in the design and appraisal of helical gears (A)..... 486

JOHNSON, N. R.
Influence of gradient temperature fields on thermocouple measurements (A)... 960

JOHNSON, R. L.
On friction and lubrication at temperatures to 1000 F with particular reference to graphite (A)..... 1165

JOHNSON, ROGER S.
Practical unit of length—the four-inch "fint" (C)..... 593

JOHNSON, W. E.
P. A. R. homogeneous reactor (cond.)... 242
Pennsylvania advanced reactor–process description (A)..... 1161

JOINTS. *See* CEMENTED JOINTS, RIVETED JOINTS, WELDED JOINTS

JONES, C. E.
Application of automatic digital-data-collecting to boiler testing..... 1017
Convection heat transfer and pressure drop of air flowing across in-line tube banks, Part I (A)..... 291
Discussion of an application of automatic digital-data-collecting system to boiler testing (A)..... 772

JONES, G. T.
Condenser at Portland (A)..... 1163

JORGENSEN, S. M.
Overstrain and bursting strength of thick-walled cylinders (A)..... 1063

JOSEPH, L.
Control of flow distribution by mixing headers (A)..... 1067

JURGENSEN, C. A.
Tailoring a training program to company needs (A)..... 584

K

KAEMPFFERT, WALDEMAR BERNHARD
Obituary..... 326

KAHLER, H. LEWIS
Conductivity versus sodium by flame spectrophotometer in steam purity studies (A)..... 480

KALMAN, R. E.
Design of a self-optimizing control system (A)..... 587

KALWITZ, MYLES FRED
Obituary..... 162

KANTER, J. J.
On the quality requirements for steel valves for nuclear power plants (A)... 474

KARAM, H. J.
Polymer properties involved in process equipment design (A)..... 481

KASSCHAU, KENNETH
Design and construction problems of APPR-1 (A)..... 769

KATES, E. J.
Diesel operation and fault diagnosis (BR)..... 1077

KATZ, D. L.
Heat transfer from superheated vapors to a horizontal tube (A)..... 1068

KAYAN, C. F.
Analysis of a process-fluid-flow network by electrical analogy (A)..... 590
Performance prediction for a process heat-and-power complex by resistance concept (A)..... 775

KAYE, JOSEPH
Experimental and analytical study of two-component two-phase flow in an ejector with condensation (A)..... 962
Modes of adiabatic and diabatic fluid flow in an annulus with an inner rotating cylinder (A)..... 964

KAYS, W. M.
Heat transfer from a rotating cylinder with and without cross flow (A)..... 187

KECECIOGLU, D.
Force components, chip geometry, and specific cutting energy in orthogonal and oblique machining of SAE 1015 steel (A)..... 480
Shear-strain rate in metal cutting and its effects on shear flow stress (A).... 479
Shear-zone temperature in metal cutting and its effects on shear-flow stress (A)..... 774

KEDY, STILES F.
Obituary..... 626

KEENAN, J. H.
Head loss in flow through a cyclone dust separator or vortex chamber (A)..... 382

KELLER, CURT
Receives ASME Gas Turbine Power Award..... 904

KELLER, W. M.
Atomic-powered locomotive? (D)..... 687
Use of atomic energy in the testing of materials..... 258

KELLY, JOHN THOMAS
Obituary..... 716

KENNEDY, WILLIAM ARTHUR
Obituary..... 716

KERN, D. Q.
Horizontal condenser theory—Part I, Mathematical development of tube loading (A)..... 1068

KERR, S. LOGAN
Honored by ASME for Committee work..... 1181

KESTIN, J.
Corrections for the oscillating-disk viscometer (A)..... 381
Viscosity of five gases: a re-evaluation (A)..... 187

KETTERING, CHARLES FRANKLIN
Professional amateur: the biography of Charles Franklin Kettering (BR)..... 498

KIDDER, R. E.
Unsteady flow of gas through a semi-infinite porous medium (A)..... 885

KILMER, J. W.
Eight years of experience with inert gas equipment (A)..... 1067

KINCAID, LEROY MILLER
Obituary..... 1214

KINEMATICS
Graphical versus computer techniques—for mechanism analysis (A)..... 383
Simple formula for determining the position of maximum slider velocity in a slider-crank mechanism (A)..... 589
Synthesis of four-bar mechanisms by the method of components (A)..... 287

KING, J. A.
Evolution of a small turbojet (A)..... 283

KING, T. H.
Problems encountered in the selection and use of air-cooled, heat-transfer equipment (A)..... 47

KINGERY, W. D.
Development of ceramic insulating materials for high-temperature use (A)..... 961

KITTREDGE, JOHN W.
Obituary..... 218

KITTRIDGE, C. P.
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings (A)..... 482

KLEIN, J. D.
Development of ceramic insulating materials for high-temperature use (A)..... 961

KLINE, L. V.
Work capacities of energy storage systems on basis of unit weight and unit volume (A)..... 682

KLINE, S. J.
The "state principle"—some general aspects of the relationships among the properties of systems (A)..... 381

KNAPP, R. T.
Accelerated field test of cavitation intensity (A)..... 288

KO, SHAO-YEN
Laminar mass and heat transfer from ellipsoidal surfaces of fineness ratio 4 in axisymmetrical flow (A)..... 880

KOCH, T. F.
Logic of organizational planning..... 836

KOENIG, F. O.
The "state principle"—some general aspects of the relationships among the properties of systems (A)..... 381

KOENIG, JOHN H.
New materials that the design engineer should know about—ceramics and refractory materials..... 725

KOENIGSBERGER, F.
Impact stresses in drop-hammer guides (A)..... 588

KOGA, TOYOKI
Method for solving problems of irrotational gas flow by means of high-speed digital computers (A)..... 971

KOPF, JOSEPH LEONARD
Joseph Leonard Kopf—a tribute (Ed)... 1111

KRAYBILL, R. R.
Heat transfer and pressure drop in odd-shaped annuli (A)..... 1069

KRIEBEL, A. R.
Stall propagation in a cascade of airfoils (A)..... 968

KRIEGSHEIM, HEINRICH
Obituary..... 1010

KREISLE, L. F.
Surface roughness—a criterion for minimum hydrodynamic oil-film thickness of short journal bearings (A)..... 50

KREITER, M. R.
Heat transfer "beyond burnout" for forced-convection bulk boiling (A).... 768

KREITH, F.
Heat transfer from a rotating disk in turbulent flow (A)..... 375

KU, Y. H.
Phase-space method for analysis of nonlinear control systems (A) 189

KUECHLER, GUSTAVE HENRY
Obituary 422

KUEHN, F. W.
Controlled starting and loading of modern power stations (A) 1160

KUHN, E. C.
Influence of load and thermal distortion on the design of large thrust bearings (A) 775

L

LADLES. *See* IRON AND STEEL MANUFACTURE

LAFFOON, CARTHRAE MERRETTE
Obituary 826

LAIRD, A. D. K.
Two-phase flow in rough tubes (A) 968

LAKS, H.
Effect of stress on creep at high temperatures (A) 285

LAMBERTSON, T. J.
Performance factors of a periodic-flow heat exchanger (A) 882

LANDAU, H. G.
Simple procedure for improved accuracy in the resistor-network solution of Laplace's and Poisson's equations (A). 285

LANDIS, F.
Effectiveness of stub fins as determined by the Teledeltos paper analog (A) 960

LANDIS, JAMES NOBLE
Biography 812
Nominated for president, 1957–1958 812

LANGE, E. PAUL
EJC and affiliate member societies 20

LANGMUIR, IRVING
Obituary 919

LAPPING. *See* METAL FINISHING

LAPSLEY, J. T.
Stresses alter hardness 1127

LARINOFF, M. W.
Cooling towers for steam-electric stations—selection and performance experiences (A) 191

LARKIN, ALBERT CHESEBRO
Obituary 126

LARSON, R. N.
Use of heavy fuel in high-speed diesel engines on river towboats (A) 676

LASSITER, L. W.
Turbulence in small air jets at exit velocities up to 705 feet per second (A) 971

LASZLO, T. S.
Solar furnace (D) 386

LATHES. *See* MACHINE TOOLS

LATSHAW, ELMER
Obituary 530

LAUX, R. J.
Component fatigue analysis for maintenance 656

LEAD
Radiographic inspection of lead linings during fabrication (D) 686

LEAD-BISMUTH
Heat transfer to lead-bismuth in turbulent flow in an annulus (A) 187

LEBELL, D.
Multipliers for nonlinear, compensatio *n* of control systems (A) 587

LEES, SIDNEY
Design basis for cascade-type positional servomechanisms (A) 189

LEFEBVRE, LEROY MILLER
Obituary 1214

LEIGHTON, M. D.
Heat transfer and fluid friction during flow across banks of tubes (A) 376

LEITH, W. C.
Progress report on standardization of the vibratory-cavitation test (A) 185

LESLIE, BERNARD SHEPARD
Obituary 914

LESSIG, OSCAR IRA
Obituary 422

LESTER, J. T., JR.
Two applications of a digital computer to machine design problems (A) 289

LETOURNEAU, B. W.
Pressure drop for parallel flow through rod bundles (A) 483

LETOURNEAU, R. L.
Mobile and fixed platforms for waters up to 600 ft (A) 1061

LEUENBERGER, H.
Compilation of radiation shape factors for cylindrical assemblies (A) 374

LEVATA, ANTHONY A., JR.
Obituary 826

LEVENS, A. S.
Alignment diagrams (D) 494

LEVINE, P.
Two-dimensional inflow conditions for a supersonic compressor with curved blades (A) 381

LEVINE, Z.
Wetting effects on boiling heat transfer—the copper-stearic acid system (A) 1068

LEWIS, F.
Current development problems in high-temperature aircraft roller bearings (A) 1164

LEWIS, T. G., JR.
Ultrafinishing—a new high-precision lapping process (A) 184

LI, J. P.
Beams of uniform strength subjected to uniformly distributed loading (A) .. 380

LICHT, L.
Self-excited vibrations of an air-lubricated thrust bearing (A) 1163

LIDBURY, FRANK AUSTIN
Obituary 532

LIEBERMAN, ARTHUR ARNOLD
Obituary 1106

LIGNITE. *See* FUELS

LIN, D. J. L.
Application limits and accuracies of control-valve flow coefficient CV (A) 49

LINDSAY, A. L.
Design and testing of containment provisions for the engineering test reactor (A) 973
Engineering and construction of the engineering test reactor—Part II (A).. 769

LING, CHIH-BING
Stresses in a perforated strip (A) 776

LING, F. F.
On the theoretical analysis of a dynamic thermocouple (A) 291

LINKAGES. *See* MECHANISMS

LIQUID METALS. *See* HEAT TRANSFER, LEAD-BISMUTH, MERCURY, POWER PLANTS—NUCLEAR

LOCHIANO, R.
Remote-controlled, engine-driven, centrifugal, gas-compressor station (A) .. 48

LOCOMOTIVES
Atomic-powered locomotive? .266, (D) 687
Locomotives for Egypt (A) 672
Progress in railway mechanical engineering—1955–1956 140
Rail and flange lubrication in motion (A). 673

LOCOMOTIVES—DIESEL
Dual-powered high-speed locomotive ... .341, (D) 1074
Use of economy fuels on diesel locomotives (A) 675

LOCOMOTIVES—GAS-TURBINE
Gas-turbine locomotives (A) 358
Gas-turbine maintenance in severe service 639

LOGISTICS. *See* PETROLEUM INDUSTRY

LOGUE, CHARLES HAYES
Obituary 422

LONDON, A. L.
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrices (A) 377

LONG, F. VINTON
Supervisory control on gas pipelines (A) 1064

LONGENECKER, CHARLES K.
Obituary 326

LONGSTRETH, M. O.
"Zytel" nylon resin (D) 498

LOOMS. *See* TEXTILE INDUSTRY

LOONEY, ROBERT
Method for presenting the response of temperature-measuring systems (A)... 189

LOUDEN, JAMES KEITH
Biography 70
Receives Worcester Reed Warner Medal. 70

LOUTREL, CYRUS HENRY
Obituary 626

LOUZECKY, P. J.
Design and development of a two-cycle turbocharged diesel engine (A) 380

LOVELY, JOHN E.
Receives Certificate of Award for ASME standards work 1001

LUBKIN, J. L.
Theory of adhesive scarf joints (A) 285

LUBRICANTS AND LUBRICATION. *See also* BEARINGS, RESEARCH
Bearings, lubricants, and lubrication—a digest of 1956 literature 842
Behavior of the lubricating film and side leakage of dynamically loaded bearings (A) 1164
Bibliography 850
Current development problems in high-temperature aircraft roller bearings (A) 1164
Effect of lubricant inertia in journal-bearing lubrication (A) 971
Electrical effects accompanying the stick-slip phenomenon in boundary lubrication (A) 292
Experiments on gas-lubricated journal bearings (A) 51
Heat-transfer effects in hydrostatic thrust bearing lubrication (A) 51
Lubrication conference to review research projects in October 708
Oil seals to provide positive lubrication on large or high-speed thrust bearings (A) 774
On friction and lubrication at temperatures to 1000 F with particular reference to graphite (A) 1165
On the theory of grease-lubricated thrust bearings (A) 52
Rail and flange lubrication in motion (A) 673
Self-monitoring lubrication (A) 462
Solution of Reynolds equation for finite journal bearings (A) 1164
Surface deformations in the hydrodynamic slider-bearing problem and their effect on the pressure development (A) 1164
Surface roughness—A criterion for minimum hydrodynamic oil-film thickness of short journal bearings (A) 50
Theoretical and experimental analysis of hydrodynamic gas-lubricated journal bearings (A) 1164
Titanium not harmful to lubricants (A).. 1055

LUNCHIK, M. E.
Behavior of cylinders with initial shell deflection (A) 970

LUND, JOHN BARTINE
Obituary 826

LUNDBERG, R. M.
Determination of heat content of coal by regression analysis (A) 53

LYKOUDIS, P. S.
Heat transfer in liquid metals (A) 965

LYLE, J. E.
Cold-weather pipe lining (A) 47

LYNCH, FRANK WAGNER, JR.
Obituary 126

LYON, F. H.
Some suggestions for research in diaphragm technology (A) 487

LYPE, E. F.
Determination of the equation of state from wave-front observations (A) 291

M

MACADAM, J.
Fabrication of vulcanized fiber 154

MACALUSO, C. A.
Automatic, spray desuperheating, closed system for testing compressors (A) 482

MCBRIAN, RAY
Use of atomic energy in the testing of materials (D) 782
Use of economy fuels on diesel locomotives (A) 675

MCCABE, IRA EMMETT
Obituary 628

MCCABE, J. L.
Cleaning methods used in the overhaul of aircraft gas-turbine power plants (A) 680

MCCONE, ALAN
Economics of contract maintenance (A). 771

MCCORMACK, DANIEL JAMES
Obituary 628

MCCORMACK, J. A.
Are engineers underpaid?—the problem 165

MCCRAW, HOWARD CABE
Obituary 916

MCCULLOUGH, C. ROGERS
Design of reactor systems for safety 251

MACCULLOUGH, GLEASON HARVEY
Obituary ... 218

MCDANIEL, WEYMOUTH N.
Enrico Fermi fast-breeder reactor (cond.) ... 240

MACDONALD, WILLIAM ROY
Obituary ... 628

MCDOWELL, E. L.
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness (A) ... 885

MACDUFF, J. N.
Vibration design charts (A) ... 190

MCEWEN, L. H.
Heat transfer "beyond burnout" for forced-convection bulk boiling (A) ... 768

MACFARLANE, W. A.
Industrial fuel utilization in the United Kingdom (A) ... 53

MCFERON, D. E.
Transient interface temperatures in plain peripheral milling (A) ... 479

MCGANN, PAUL W.
Relative demand for fuels ... 550

MCGINNIS, R. E.
Experimental determination of gear tooth stresses in large marine gears (A) ... 290

MACHINE DESIGN. *See also* HUMAN ENGINEERING
Plating-machine design (A) ... 952
Two applications of a digital computer to machine design problems (A) ... 289

MACHINE-SHOP PRACTICE
Boring machine for ultraprecision work (A) ... 44
Heavy-duty radial boring machine (A) ... 182
Plastic jigs and fixtures (A) ... 1053
240-in-stroke broaching machines (A) ... 177

MACHINE-TOOL INDUSTRY
Machine-tool shipments (A) ... 366

MACHINE TOOLS. *See also* AUTOMATIC CONTROL, DRILLS, METAL CUTTING
"Building-block" finishing machine (A) ... 459
Ceramic and carbide tool performance tests (A) ... Part 1, 184; Part II, 967
Copying lathes as transfer machines (A) ... 958
Development of the Natco feed-rate indicator (A) ... 589
Mechanical transfer mechanism which simulates the action of an operator's hand and arm (A) ... 471
Numerically controlled machine tools (A) ... 356
Some B.S.A. tools (A) ... 958

MACHINERY
Component fatigue analysis for maintenance ... 656

MACHINING. *See* WOODWORKING MACHINERY

MACHOL, ROBERT E.
Introduction to operations research (BR) ... 890

MACINNES, W. F.
Effect of intake combustion-air conditioning on performance of spark ignition gas engines (A) ... 678

MCINTYRE, JAMES K.
Obituary ... 422

MCINTYRE, WILLIAM STUART
Obituary ... 532

MCKAY, R. A.
Paper honeycomb used for core materials at the Brunswick Balke Collender Company (A) ... 679

MACKEY, C. O.
Convection heat transfer and pressure drop of air flowing across in-line tube banks, part II (D) ... 291

MCLEAN, E. C.
Failure of a welded drying drum by caustic embrittlement (AC) ... 686

MCMAHON, E. C.
Fly-ash refiring (A) ... 53

MCNAUGHTON, A. G. L.
Honorary member of Engineering Institute of Canada ... 1181

MCNERNEY, HENRY FRANCIS
Obituary ... 1106

MAGINNISS, F. J.
Application of digital computers to bearing design (A) ... 288
Electronic data processing machines; controls for design and engineering procedures ... 632

MAGNER, H. J.
Appalachian Basin air drilling—three years' experience and results (A) ... 1065

MAGNESS, L. S.
Nodal patterns of the free flexural vibrations of stiffened plates (A) ... 972

MAGNETISM
Doubly oriented magnetic sheet (A) ... 952
Improved magnetic alloy (A) ... 362
Superstrong magnet (A) ... 169

MAHALINGAM, S.
Forced vibrations of systems with non-linear, nonsymmetrical characteristics (A) ... 973

MAINTENANCE. *See also* AIRPLANE ENGINES, PETROLEUM REFINING
Control of manpower and material by planning and scheduling maintenance work (A) ... 771
Designing process plants in relation to maintenance (A) ... 878
Developments in the analysis of maintenance problems ... 931
Economics of contract maintenance (A) ... 771
Mechanical design approach to simplified maintenance (A) ... 681
Preventive maintenance plan for gas-products plants and related operations (A) ... 771

MALCOLM, D. G.
Industrial engineering—a definition and forecast (AC) ... 496

MALEEV, VLADIMIR LEONIDAS
Obituary ... 1214

MALLETTE, F. S.
Air pollution handbook (BR) ... 783
Encyclopedia of instrumentation for industrial hygiene (BR) ... 783

MALONEY, MICHAEL JOSEPH
Obituary ... 126

MANAGEMENT. *See also* FOREMAN TRAINING, MAINTENANCE, ORGANIZATION, PRODUCTION CONTROL, QUALITY CONTROL
Australia and the challenge of change (BR) ... 1175
Control of the engineering functions in a decentralized company (A) ... 584
Development of engineering managers through planned education and training ... 741
Electronic data processing machines; controls for design and engineering procedures ... 632
Engineering as a function of management (A) ... 484
"Engineering-management controls" is theme of conference, Pittsburgh, 1957 ... 210
Engineers study administration (A) ... 485
Human factors in engineering management ... 152, (D) 687
Personality factors in engineering practice (A) ... 974
Tailoring a training program to company needs (A) ... 584

MANJOINE, M. J.
Creep characteristics of type 347 stainless steel at 1050 and 1100 F in tension and compression (A) ... 188

MANN, HARVEY BLAINE
Obituary ... 126

MANN, L. B., JR.
Determination of turbine-stage performance for an automotive power plant (A) ... 580

MANNING, GEORGE
Power drives for warp-preparation machines (A) ... 1168

MANOMETERS. *See* INSTRUMENTS—PRESSURE

MANPOWER
Can women crash the gate? ... 598
Classroom first line of defense in fight to wipe out engineering manpower shortage ... 893

MANSON, S. S.
Practical solution of plastic deformation problems in the elastic-plastic range (A) ... 478

MANSON, S. V.
Gas friction—heat transfer charts for ducted flows (A) ... 966

MANUFACTURING. *See also* GAGES, PRODUCTION CONTROL, QUALITY CONTROL
Engineering—tooled for action (A) ... 484
Fabrication of vulcanized fiber ... 154
How Timken research, engineering, and management developed and built its mechanized roller bearing plant ... 981
Manufacturing small engines (A) ... 1166
Mechanical-assembly equipment—some economic considerations in its development and use ... 332
Production engineering of large liquid-fuel rocket engines (A) ... 582
Production engineering of solid-fuel rocket motors (A) ... 582

MARCO, S. M.
Effects of complex stress-time cycles on the fatigue properties of metals (A) ... 189

MARCO (*continued*)
Work capacities of energy storage systems on basis of unit weight and unit volume (A) ... 682

MARINE ENGINEERING. *See also* BOILERS, GEARS, GAS TURBINES
Air and gas duct system for the gas-turbine vessel John Sergeant (A) ... 284
Design features of a gas turbine for a supercharged boiler (A) ... 1166
Designing the marine gas turbine ... 860
40-ft personnel boat with gas-turbine propulsion-engine installation features and operating experience (A) ... 284
Nuclear power for ship propulsion (A) ... 1158
Variations in marine-engine performance (A) ... 677

MAROUS, J. C.
D-c braking of a-c motors in the textile industry (A) ... 1168

MARQUARDT, C. M.
Weighing and blending with pneumatic belt scales ... 934

MARTIN, ELMER C.
Obituary ... 914

MARTIN, G. H.
Undercutting of spur gear teeth (A) ... 589

MARTIN, M. D.
Nuclear weapons engineering (A) ... 768

MARTIN, RONALD J.
Allocation of heat in an industrial power plant—a practical approach ... 743

MARTIN, W. T.
Generalized presentation of gas-turbine combustor performance (A) ... 581

MARTINY, W. J.
Electronic data processing machines; controls for design and engineering procedures ... 632

MASON, JOHN ROBERTS
Obituary ... 1216

MASS TRANSFER. *See* FLOW OF FLUIDS

MASTIC. *See* COATINGS

MASUR, E. F.
Collapse strength of redundant beams after lateral buckling (A) ... 382

MATER, M. H.
Mechanical unit for taper sawing (A) ... 882

MATERIALS HANDLING. *See also* AIR TRANSPORT, HOISTING MACHINERY, INDUSTRIAL TRUCKS, WAREHOUSES
Belt feeders ... 1042
"Hot material" conveyer belt (A) ... 179
Materials handling in product finishing (A) ... 379
Materials handling of bulk materials in the meat-packing industry (A) ... 378
Materials in motion ... 1116
Planobot—a universal transfer device which simulates arm, wrist, and hand motions (A) ... 949
Reducing power consumption in hydraulic circuits (D) ... 495
Report on the material handling equipment industry (A) ... 949

MATERIALS TESTING. *See also* RADIOGRAPHIC INSPECTION
Progress report on standardization of the vibratory-cavitation test (A) ... 185

MATHEMATICS
Algebraic approach to design of automatic controls (A) ... 587
Direct method for determining Airy polynomial stress functions (A) ... 886
Effect of logarithmic element in an otherwise linear process-control system (A) ... 49
Improvement of the Holzer table based on a suggestion of Rayleigh's (A) ... 285
New approach to the theory of thin, slight cambered profiles (A) ... 381
New finite-difference technique for solution of the heat-conduction equation, especially near surfaces with convective heat transfer (A) ... 290
Optimization of time-varying linear systems with nonstationary inputs (A) ... 588
Saint Venant's principle: a biharmonic eigenvalue problem (A) ... 884
The sector problem (A) ... 776
Simple procedure for improved accuracy in the resistor-network solution of Laplace's and Poisson's equations (A) ... 285
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer (A) ... 970

MATNEY, C.
Design features and development of the cross-compound, single flow turbine with axial exhaust—for the Portland Station (A) ... 1163

MATTERN, JOHN F.
Obituary ... 422

MATTHEWS, JOHN ELMER
Obituary ... 716

MATUSZAK, J. M.
Mechanical unit for taper sawing (A) ... 882

MAULL, W. W.
Fly-ash refiring (A) ... 53

MAUTZ, F. F.
Approach to the selection of steam unit size for a large hydrosteam system (A) ... 967

MAXWELL, BRYCE
Developments in plastic engineering—1955–1956 ... 161, 783

MAY, W. F.
Appraisal of compressor-cylinder cooling requirements (A) ... 677

MAYER, E.
Estimation of temperature patterns in multiply shielded systems (A) ... 376

MEASURES. *See* PHYSICAL UNITS

MECHANISMS. *See also* CAMS
Mechanical transfer mechanism which simulates the action of an operator's hand and arm (A) ... 471
Proposed standardized system for notation and classification of the four-bar linkage (A) ... 1169
Simple formula for determining the position of maximum slider velocity in a slider-crank mechanism (A) ... 589
Synthesis of four-bar mechanisms by the method of components (A) ... 287

MEDALS. *See* HONORS AND AWARDS

MEDICAL RESEARCH
Use of ionizing radiations in control of parasitic infections (A) ... 477

MEDITZ, ROBERT FRANK
Obituary ... 532

MEEHAN, J. P.
Body cooling and hand cooling ... 1032

MELDRAM, C. W.
Materials handling—equipment and techniques for loading and unloading all-cargo aircraft (A) ... 384

MEMBRANE ANALOGY
Torsion and flexure of slender solid sections (A) ... 1167

MENDELSON, A.
Practical solution of plastic deformation problems in the elastic-plastic range (A) ... 478

MENKES, SHERWOOD B.
Developing social awareness in engineers ... 457, 1076

MERCHANT, M. E.
On the basic mechanics of the grinding process (A) ... 378
Production research in metal cutting ... 1137

MERCKX, K. R.
Time and temperature dependence of thermal stresses in cylindrical fuel elements (A) ... 477

MERCURY
Heat-transfer rates to cross-flowing mercury in a staggered tube bank—II (A) ... 964
Heat transmission to fluids with low Prandtl numbers for flow through tube banks (A) ... 964

METAL COATING
Gold-coated engine shrouds for airplanes (A) ... 955

METAL CREEP
Creep characteristics of type 347 stainless steel at 1050 and 1100 F in tension and compression (A) ... 188
Effect of stress on creep at high temperatures (A) ... 285

METAL CUTTING. *See also* DRILLS, GEARS, GRINDING, MACHINE TOOLS
Ceramic and carbide tool performance tests—Part I, 184; Part II ... 967
Chatter of lathe tools under orthogonal cutting conditions (A) ... 774
Experimental measurement of metal-cutting temperature distributions (A) ... 774
Force components, chip geometry, and specific cutting energy in orthogonal and oblique machining of SAE 1015 steel (A) ... 480
Metal-cutting analyses of the past hundred years (D) ... 294
Metalworking lubrication—a digest of 1956 literature ... 847
Production research in metal cutting ... 1137
Shear-strain rate in metal cutting and its effects on shear flow stress (A) ... 479
Shear-zone temperature in metal cutting and effects on shear-flow stress (A) ... 774
Temperature distribution at tool-chip and tool-work interface in metal cutting (A) ... 479
Tool-work-thermocouple compensating circuit (A) ... 479
Transient interface temperatures in plain peripheral milling (A) ... 479

METAL DRAWING
Elevated temperature drawing (A) ... 276
Five-stage horizontal transfer press (A) ... 470

METAL EXTRUSION
Back extrusion of heavy-walled Zircaloy-2 cups (A) ... 590, 936
Cold extrusion of unalloyed titanium (A) ... 378
Experimental and theoretical pressures and velocity fields for various lead extrusions (A) ... 292

METAL FAILURES
Investigation of the generator rotor burst at the Pittsburgh Station of the Pacific Gas and Electric Company (A) ... 1162
Operating experience with high-temperature steam rotors and design improvements in rotor blade fastening (A) ... 1161

METAL FATIGUE. *See also* METAL TESTING—FATIGUE, THERMAL STRESSES
Component fatigue analysis for maintenance ... 656
Fatigue of metals under combinations of stresses (A) ... 190
Motion pictures of metal fatigue (A) ... 38

METAL FINISHING
Ultrafinishing—a new high-precision lapping process (A) ... 184

METAL FORMING. *See also* METAL EXTRUSION, METAL SPINNING
Floturn—a production process as well as a development (A) ... 967
Metalworking lubrication—a digest of 1956 literature ... 847
Spin-forge combines features of vertical spinning lathe with forging process (A) ... 950

METAL ROLLING
Titanium-sheet-rolling program ... 1112

METAL SPINNING
Forming of titanium head shapes (A) ... 172

METAL TESTING. *See also* STEEL ALLOYS
Flow and fracture of nodular cast iron (A) ... 188
Nonhomogeneous yielding of steel cylinders; 1-mild steel (A) ... 188
Stresses alter hardness ... 1127

METAL TESTING—FATIGUE
Effects of complex stress-time cycles on the fatigue properties of metals (A) ... 189
Million pound high-speed dynamic fatigue-test machine (A) ... 589
Statistical appraisal of the Prot method for determination of fatigue endurance limit (A) ... 382

METAL TESTING—HARDNESS
Internal microhardness testing (A) ... 361

METAL TESTING—TENSION
Delayed-yield time effects in mild steel under oscillatory axial loads (A) ... 188

METALLOGRAPHY
Failure of a welded drying drum (D) ... 684
Metallurgical yield-stress observation by means of stressing metallograph ... 13

METALLURGICAL FURNACES. *See* INDUSTRIAL FURNACES

METALLURGY. *See also* METALLOGRAPHY
Demystifying inclusions (A) ... 361
Eight years of experience with austenitic-steel piping materials at elevated steam conditions (A) ... 290
Metallurgical briefs (A) ... 360, 955
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (A) ... 289
New developments discussed at American Ordnance Association meeting ... 112
Vacuum metallurgy—the "age-old art of brazing," combined with vacuum techniques ... 1039

METALS
New materials that the design engineer should know about ... 720
Theoretical criterion for the fracture of metals under combined alternating stresses (A) ... 486

METERS. *See* INSTRUMENTS

METZNER, MAXWELL WALLACE
Obituary ... 916

MEYER, HENRY CODDINGTON
Obituary ... 916

MILBRADT, K. P.
Collapse strength of redundant beams after lateral buckling (A) ... 382

MILES, V. H.
Study of industrial-engine operation (A) ... 676

MILEY, NORRIS, E.
Application of plastic tape to 22 miles of 22-in-diam natural gas pipeline (A) ... 1060

MILLER, EARL C.
Utilization of lignite; a comparison between spreader-stoker and pulverized-lignite firing in steam generation ... 23, 890

MILLER, H. M., JR.
Human factors in engineering management ... 152

MILLING. *See also* METAL CUTTING
Numerically controlled milling machines (A) ... 866

MILLS, D. A.
Recent advances in food technology (AC) ... 390

MILNE, G. R.
Indian Point pressurized-water reactor (cond.) ... 233

MINDLIN, R. D.
Influence of width on velocities of long waves in plates (A) ... 885
Stress-strain relations and vibrations of a granular medium (A) ... 776

MISSILES
Arnold Engineering Development Center ... 8
Boron fuels for transonic aircraft and missiles (A) ... 1047
Designing equipment for reliability ... 1142
Missile tester (A) ... 37

MITCHELL, C. J. B.
Standardization of centrifugal chemical pumps (A) ... 878

MITCHELL, LESTER FELTER
Obituary ... 828

MIXING. *See also* FLOW OF FLUIDS
High-horsepower Banbury mixing (A) ... 292

MOCHEL, N. L.
Operating experience with high-temperature steam rotors and design improvements in rotor blade fastening (A) ... 1161

MOFFAT, R. J.
Designing thermocouples for response rate (A) ... 580

MOLÉ, HARVEY EDWARD
Obituary ... 828

MOMENT OF INERTIA. *See* APPLIED MECHANICS

MONGEON, RALPH KENNETH
Obituary ... 422

MONNIK, H. J.
Designing process plants in relation to maintenance (A) ... 878

MONROE, E. S., JR.
Convection heat transfer and pressure drop of air flowing across in-line tube banks, Parts I and II (A) ... 291

MONROE, H.
Air and gas duct system for the gas-turbine vessel John Sergeant (A) ... 284

MOORE, C. C.
Current development problems in high-temperature aircraft roller bearings (A) ... 1164

MOORE, H. F.
Automatic computing for process-unit operating guides (A) ... 966

MOORE, R. W., JR.
Skewed boundary-layer flow near the end walls of a compressor cascade (A) ... 377

MOORE, S. C.
Report on results obtained by use of controlled drill-system torque in field operation (A) ... 1063

MOORE, W. T.
Nuclear power trends (A) ... 1160

MOREAU, B. L.
Peace River and Alaska Highway gas-gathering system (A) ... 966

MORELLI, AMEDEO J.
Receives Undergraduate Student Award ... 74

MORGAN, W. R.
Thermal conductivity of insulating materials for use in nuclear reactors (A) ... 1071

MORI, M.
Statistical treatment of sampled-data control systems for actual random inputs (A) ... 585

MORIARTY, C. D.
Ultrasonic detection of thin laminar inclusions (A) ... 1161

MOSER, E. I.
Apparent frictional forces of clamping elements as used in the oil industry (A) ... 385

MOTION PICTURES. *See* INDUSTRIAL FILMS, METAL FATIGUE, PHOTOGRAPHY

MOTOR VEHICLES
Forced lateral oscillations of trailers (A) ... 883
Free-piston-turbine tractor (A) ... 460
Gas-turbine automobiles ... 643
Parking belt for automobiles (A) ... 766
Safe automobile—a special design (A) ... 1150
Sports cars from Britain (A) ... 1151

MOTORS. *See* ROCKETS

MOULTROP, IRVING E.
Obituary ... 628

MOXHAM, EGBERT
Obituary ... 422

MOYER, W. B.
Design features of a gas turbine for a supercharged boiler (A) ... 1166

MUELLER, E. L.
New type automatic dispatching system at Kansas City (A) ... 483

MURDOCK, W. L.
Systems design for production-control data processing (A) ... 584

MURPHY, A. H.
Fast-response thermocouples using tubular hot-junction elements (A) ... 879

MURPHY, J. J.
Fabricated pressure piping as related to nuclear applications (A) ... 474
Requirements for fabrication of pressure piping as related to service (A) ... 1171

MURPHY, WILLIAM J.
Obituary ... 326

MUSCHENHEIM, FREDERICK A.
Obituary ... 422

N

NAGHDI, P. M.
Stresses and displacements in an elastic-plastic wedge (A) ... 382

NASH, C. R.
Fuel-handling system for a fast breeder reactor (A) ... 475

NASH, W. A.
Buckling of initially imperfect cylindrical shells subject to torsion (A) ... 382

NATURAL GAS
Gas pulsations—the problem, Southern Gas Association's approach, and results (A) ... 676

NATURAL-GAS PIPELINES
Application of plastic tape to 22 miles of 22-in-diam natural gas pipelines (A) ... 1060
Development and application of high density asphalt mastic coating (A) ... 1060
Modernizing compressor station piping (A) ... 1061
Operating considerations in the application of gas-turbine-driven centrifugal pipeline compressors (A) ... 46
Peace River and Alaska Highway gas-gathering system (A) ... 966
Pressure gradient sheet for rating gas pipelines (A) ... 1061
Remote-controlled, engine-driven, centrifugal, gas-compressor station (A) ... 48
Supervisory control of gas pipelines (A) ... 1064

NAVIGATION. *See* COMPRESSED AIR, RADAR

NAYLOR, GEORGE, M.
Obituary ... 128

NEEDHAM, HOWARD HENRY
Obituary ... 1106

NEITHERCUT, DONALD C.
Are engineers underpaid?—a statistical analysis ... 166

NELSON, H. W.
Ignitibility testing as a measure of the burning characteristics of solid fuels (A) ... 52

NEOU, CHING-YUAN
Direct method for determining Airy polynomial stress functions (A) ... 886

NETS. *See* GRAPHICAL METHODS

NETWORK ANALYSIS. *See* ELECTRIC ANALOGY

NETWORKS. *See* MATHEMATICS

NEWCOMB, ROBERT EVERETT
Obituary ... 1216

NEWELL, FLOYD B.
Diaphragm characteristics (A) ... 486

NEWTON, ALWIN B.
Gas-motor air conditioning ... 454

NEWTON, R. E.
Professional associations (Digest) ... 818

NOBELIUM. *See* CHEMICAL ELEMENTS

NODULAR IRON. *See* CAST IRON

NOMOGRAMS. *See* GRAPHICAL METHODS

NONDESTRUCTIVE TESTING
Are standards or codes practical for ultrasonic examinations of metals and weldments? (A) ... 484

NONFERROUS METALS AND ALLOYS
High-temperature alloy (A) ... 275
New high-strength aluminum-bronze alloy (A) ... 34
Production of nonferrous metals (A) ... 663

NONLINEAR SYSTEMS. *See* AUTOMATIC CONTROL, SERVOMECHANISMS

NOON, T. C.
Missile auxiliary power-supply development (A) ... 969

NOREEN, A. E.
Generalized presentation of gas-turbine combustor performance (A) ... 581

NOZZLES
Design of supersonic expansion nozzles and calculation of isentropic exponent for chemically reacting gases (A) ... 376
Investigation of the end-wall boundary layer of a turbine-nozzle cascade (A) ... 482

NUCLEAR FUELS
Decay and storage of irradiated fuel (A) ... 475
UO_2-NaK slurry studies in loops at 600 C (A) ... 472

NUCLEAR WEAPONS
Nuclear weapons engineering (A) ... 768

NYE, D. D.
Analytical study of linearized industrial process controllers (A) ... 49

NYE, EDWIN P.
U. S. industry (D) ... 294

O

OAKEY, W. E.
Selection of carbide-tipped saw blades for optimum performance (A) ... 678

OCVIRK, F. W.
Properties of misaligned journal bearings (A) ... 50

OFFSHORE DRILLING. *See* PETROLEUM INDUSTRY, PETROLEUM-WELL EQUIPMENT

OHLGREN, H. A.
Nuclear engineering—where do we stand? ... 224, (correction) 593
Nuclear powered gas turbines for light weight power plants (A) ... 476

OIL FLOODING. *See* PETROLEUM INDUSTRY

OIL FUEL
Notes on catalytic-cracked fuels ... 651

OLDENBURGER, R.
Algebraic approach to design of automatic controls (A) ... 587
Signal stabilization of a control system (A) ... 486

OLSEN, A. G.
Recent advances in food technology (AC) ... 390

ONNEN, D. S.
Dual powered, high-speed locomotive (D) ... 1074

OPERATIONS RESEARCH
Introduction to operations research (BR) ... 890

OPPENHEIM, A. K.
Professional thinking (Digest) ... 819

OPTICAL INSTRUMENTS
Optical tooling (A) ... 277

ORDNANCE
Practical aspects of relay or pulse servomechanisms (A) ... 585

ORGANIZATION
Logic of organizational planning ... 836
Organize your engineering project (A) ... 1172

ORTLA, FREDERICK L.
Obituary ... 532

ORTLOFF, J. E.
Development and field-testing of wire line retractable rock bits (A) ... 1065

ORTMAN, F. W.
Isoelasticity in gyro rotor bearings (A) ... 1164

OSCILLATION. *See* VIBRATION

OSTERLE, J. F.
Effect of lubricant inertia in journal-bearing lubrication (A) ... 971
Heat-transfer effects in hydrostatic thrust bearing lubrication (A) ... 51
Influence of gradient temperature fields on thermocouple measurements (A) ... 960
Surface deformations in the hydrodynamic slider-bearing problem and their effect on the pressure development (A) ... 1164

OSTRACH, S.
On the stagnation of natural-convection flows in closed-end tubes (A) ... 881

OTHUS, JAMES CAREY
Obituary ... 828

OTTESEN, REALF
How to analyze the cost of machine tools (AC) ... 391

OUTWATER, J. OGDEN
Fundamental mechanics of reinforced plastics (A) ... 292

OWENS, J. E.
Control problems in sodium-cooled graphite-moderated reactors (A) 475, 749

OZDAG, M. N.
Behavior of the lubricating film and side leakage of dynamically loaded bearings (A) ... 1164

OZLEY, GEORGE ROSCOE
Obituary ... 1108

P

PALLADINO, NUNZIO J.
Receives Prime Movers Committee Award ... 73

PAN, HUO-HSI
Alignment diagrams (D) ... 493

PAPER INDUSTRY
Pulp-and-paper-mill trends toward integrating power and bark-burning boilers (A) ... 583

PARADISE, R. Y.
Analytical study of linearized industrial process controllers (D) ... 49

PARIA, GUNADHAR
Mixed boundary-value problem of elasticity with parabolic boundary (A) ... 383

PARKER, F. C.
Are standards or codes practical for ultrasonic examinations of metals and weldments? (A) ... 484

PARKING. *See* MOTOR VEHICLES

PARRISH, E. M.
Preliminary operation—Shippingport Atomic Power Station (A) ... 770

PARSONS, GEORGE KINGDON
Obituary ... 128

PASCHKIS, V.
Are engineers professional? (C) ... 1076
Rate of temperature change of simple shapes (A) ... 291

PASEK, R. L.
Determination of heat content of coal by regression analysis (A) ... 53

PASLAY, P. R.
Calendering of a viscoelastic material (A) ... 972
Forced lateral oscillations of trailers (A) ... 883
On the theory of grease-lubricated thrust bearings (A) ... 52

PATERSON, LESTER BERESFORD
Obituary ... 1108

PAUL, M. J.
Modernizing compressor station piping (A) ... 1061

PAYNE, C. A.
Industrial plant installation of a gas turbine to generate power and process steam (A) ... 48

PAYNTER, H. M.
Computer representations of engineering systems involving fluid transients (A) ... 186

PAXTON, D. D.
Solar heat for a building ... 536

PEABODY, E. P.
Dresden boiling-water reactor (cond.) ... 238

PECK, EDWARD B.
Trends in professional compensation ... 316

PEEV, ALEXANDER W.
Do engineers stand a chance in small, private enterprise? ... 908

PEGRAM, GEORGE BRAXTON
Receives first Karl Taylor Compton Gold Medal ... 1184

PELTON WHEELS. *See* POWER PLANTS—HYDROELECTRIC

PENDULUMS. *See* INSTRUMENTS

PENNELS, N. E.
CO boiler pays off in fuel savings and produces zero CO (A) ... 590

PENNING, CORNELIUS J. H.
Obituary ... 424

PENROD, E. B.
Transient heat flow determination of the thermal properties of clay (A) ... 377

PERRONE, N.
Yield loads of slabs with reinforced cutouts (A) ... 382

PERRY, HARRY
Impact of atomic energy on fossil fuels (A) ... 54

PERSON, R. A.
Compilation of radiation shape factors for cylindrical assemblies (A) ... 374

PETERSON, G. E.
Oil seals to provide positive lubrication on large or high-speed thrust bearings (A) ... 774

PETROLEUM INDUSTRY
Automatic production of oil from wellhead to pipeline (A) ... 1062
Designing safe installations for inert-gas machines (A) ... 1170
Eight years of experience with inert gas equipment (A) ... 1067
Instrumentation and controls, Centralia Water Flood, Illinois (A) ... 1171
Mathematics of oil flooding (A) ... 570
Military petroleum logistics (A) ... 1063
Mobile and fixed platforms for water up to 600 ft (A) ... 1061
Plastic pipe in the petroleum industry (A) ... 1065
Role of the mechanical engineer ... 17
Surface-controlled subsurface safety device for offshore locations (A) ... 1066

PETROLEUM PIPELINES
Cold-weather pipe lining (A) ... 47
Military petroleum logistics (A) ... 1063
Pressure surges in pipelines (A) ... 1064

PETROLEUM REFINING
Application of gas/liquid cyclones in oil refining (A) ... 385
Automatic computing for process-unit operating guides (A) ... 966
CO boiler pays off in fuel savings and produces zero CO (A) ... 590
Control of manpower and material by planning and scheduling maintenance work (A) ... 771
Economic aspects of combustion gas turbine application in the refining industry (A) ... 1066
Economics of contract maintenance (A) ... 771
Maintenance organization factors in the modern refinery (A) ... 47
Notes on catalytic-cracked fuels ... 651
Practical economics for refinery mechanical engineers (A) ... 47
Preventive maintenance plan for gas-products plants and related operations (A) ... 771
Scheduling engineering design—a vital force in refinery operations (A) ... 1063
Selection of materials for construction of catalytic reforming units (A) ... 47

PETROLEUM-WELL EQUIPMENT
Advances in diesel-electric rig design for oil well drilling (A) ... 1170
Appalachian Basin air drilling—three years' experience and results (A) ... 1065
Apparent frictional forces of clamping elements as used in the oil industry (A) ... 385
Development and field-testing of wire line retractable rock bits (A) ... 1065
Investigation of pressure drop through a rotating pipe (A) ... 1062
Offshore mobile units—present and future (A) ... 48, 335, (D)
Oil-well power drill (A) ... 664
Proved concepts in oil field roller chain drive selection (A) ... 1066
Reduced pressure drilling (A) ... 1170
Report on results obtained by use of controlled drill-system torque in field operation (A) ... 1063
Stress effects of rotary straightening on collapse resistance of high-strength casing (A) ... 1060
Torque requirements for rotary-shouldered connections and selection of connections for drill collars (A) ... 1064

PHELPS, RALPH H.
The first one hundred and fifty years: a history of John Wiley and Sons (BR) ... 594

PHILIPS, F. T.
Radiographic inspection of lead linings during fabrication (D) ... 686

PHILLIPS, NORMAN D.
Progress report—Ignitibility of solid fuels and burning rates of fixed carbon (A) ... 53

PHILLIPS, PHILIP HERLIMAN
Obituary ... 1108

PHILLIPS, W. I.
Ceramic and carbide tool performance tests—Part I (A) ... 184

PHOTOELASTICITY
Experiments for the determination of transient stress and strain distribution in two-dimensional problems (A) ... 286
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact (A) ... 1072
Photoelastic study of strain waves caused by cavitation (A) ... 886
Photothermoelasticity: an exploratory study (A) ... 973

PHOTOGRAPHY
Accuracy requirements of Graflex 70-mm combat focusing system (A) ... 486
Blueprints reproduced photographically (A) ... 178
Contact printer for templates up to 30 ft in length (A) ... 571
Nonintermittent film projector ... 345
Xerography boosts naval output (A) ... 760

PHYSICAL UNITS
Practical unit of length—the four-inch "fint" (C) ... 593

PHYSIOLOGY
Man and his thermal environment ... 1029
Pilot information utilization: a study in human response dynamics (A) ... 486

PIAN, T. H. H.
Structural damping of a simple built-up beam with riveted joints in bending (A) ... 383

PICHEL, P. W.
Shipboard gas-turbine engine tests ... 1119

PIGGYBACKS. *See* TRANSPORTATION

PIGOTT, R. J. S.
Losses in pipe and fittings (A) ... 185
Receives Elliott Cresson Medal ... 1181
Universal bearing tester (A) ... 51

PILCHER, J. M.
Ignitibility testing as a measure of the burning characteristics of solid fuels (A) ... 52

PINKERTON, ANDREW
Receives Sixty-Five Year Award of the ASME ... 1181

PINKUS, O.
Analysis of journal bearings with arbitrary load vector (A) ... 52
Solution of Reynolds equation for finite journal bearings (A) ... 1164

PIPE AND PIPING
Applicability of clad steels to heavy wall piping (A) ... 474
Austenitic steels in high-temperature steam piping (A) ... 484
Eight years of experience with austenitic-steel piping materials at elevated steam conditions (A) ... 290
Fabricated pressure piping as related to nuclear applications (A) ... 474
Investigation of thermal stress fatigue as related to high-temperature piping flexibility (A) ... 483
Losses in pipe and fittings (A) ... 185
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (A) ... 289
Pipe insulated with aluminum to resist corrosion (A) ... 761
Plastic pipe in the petroleum industry (A) ... 1065
Requirements for fabrication of pressure piping as related to service (A) ... 1171

PIPELINES. *See also* NATURAL-GAS PIPELINES, PETROLEUM PIPELINES
Aluminum gas-carrying pipeline (A) ... 174
Engineering design, testing, and operation of the Gilsonite solids pipeline (A) ... 1171
Pipeline steels—a review of the industry ... 448
Solids pipeline (A) ... 569
Steel for Canadian pipelines ... 853
Two-phase concurrent flow of liquids and air through inclined pipe (A) ... 1062

PIPING SYSTEMS
Tensor flexibility analysis of closed-loop piping systems (A) ... 1072

PIPPENGER, J.
Effects of back pressure on hydraulic oil-control valves (A) ... 482

PISTON RINGS
Teflon-based piston rings for nonlubricated applications ... 838

PITTMAN, HENRY B., JR.
Woodworking accuracy ... 542

PLANOBOT. *See* MATERIALS HANDLING

PLASTICITY. *See also* METAL CREEP, METAL TESTING
Displacements in a wide curved bar subjected to pure elastic-plastic bending (A) ... 884
On the plane plastic flow of an inset block (A) ... 972
On the principle of Haar and von Karman in statistically determinate problems of plasticity (A) ... 777
Practical solution of plastic deformation problems in the elastic-plastic range (A) ... 478

PLASTICS. *See also* MACHINE-SHOP PRACTICE, PIPE AND PIPING, ROLLS, TEFLON
Calendering of a viscoelastic material (A) ... 972
"Delrin" acetal resin (A) ... 41
Developments in plastics engineering 1955–1956 ... 161, (D) 782
Fabrication of vulcanized fiber ... 154
Fundamental mechanics of reinforced plastics (A) ... 292
"Lexan" thermoplastic; new plastic material tough enough to replace cast metals and ceramics (A) ... 574
New materials that the design engineer should know about ... 720
Penton—a new chlorine-containing polyether (A) ... 292
Polymer properties involved in process equipment design (A) ... 481
Versatile nylon batting (A) ... 568
"Zytel" nylon resin (D) ... 498

PLATES
Analysis of stresses and strains near the end of a crack traversing a plate (A) ... 973
Buckling of rectangular plates with two unsupported edges (A) ... 1072
Dynamic response of beams and plates to rapid heating (A) ... 970
Effects of a circular hole on the pure twist of an infinite strip (A) ... 286
Finite twisting and bending of thin rectangular elastic plates (A) ... 884
Force in the plane of two jointed semi-infinite plates (A) ... 1167
Influence of width on velocities of long waves in plates (A) ... 885
Nodal patterns of the free flexural vibrations of stiffened plates (A) ... 972
Response of beams and plates to random loads (A) ... 286
Some mixed boundary-value problems of the semi-infinite strip (A) ... 485
Vibration design charts (A) ... 190

PLUMBING
National plumbing code handbook published ... 603

PLUMMER, FRED L.
Receives Samuel Wylie Miller Memorial Award ... 601

PLUTONIUM
Process engineering problems in the Hanford separation plants ... 634

PLYWOOD
Chipboard, the superior plywood-core material (A) ... 679
Core materials for plywood—standard lumber cores (A) ... 679
Progressive management in plywood manufacturing ... 539

PNEUMATIC DEVICES. *See* INSTRUMENTS—PRESSURE, SPRINGS, WEIGHING MACHINES

POGUE, ROBERT BEDFORD
Obituary ... 218

POISONS. *See* INDUSTRIAL HAZARDS

PORITSKY, H.
Point source and point vortex in the hodograph plane (A) ... 485

PORTER, DAVID BURR
Receives first Gantt Citation ... 1183

POST, JOHN
Psychological tests (D) ... 496

POTTER, JAMES H.
Graduate study in mechanical engineering ... 157

POTTER, PHILIP ARTHUR
Obituary ... 716

POWDER-LANCING. *See* DEMOLITION

POWELL, E. M.
Engineering the Eddystone steam generator for 5000-psig, 1200-F steam (cond.) 132

POWELL, R. A.
Point source and point vortex in the hodograph plane (A) 485

POWER. *See also* WIND POWER
Alternator set for stand-by power supply (A) 1058
Electric energy production statistics for U. S. (A) 365
Oil or uranium—world energy resource of the future (A) 113
Trends in electric power, production in the U. S. 462
Work capacities of energy storage systems on basis of unit weight and unit volume (A) 682

POWER PLANTS
Automatic diesel power plant for use in radar systems (A) 358
Computer applications in the power industry (A) 968

POWER PLANTS—GAS-TURBINE. *See also* GAS TURBINES
Gas-turbine power station at Leghorn (A) 876
Industrial plant installation of a gas turbine to generate power and process steam (A) 48

POWER PLANTS—HYDROELECTRIC. *See also* DAMS, POWER SYSTEMS
Coal-fired plants for Ontario Hydro (A) 1051
Double Pelton wheel generator (A) 372
Glockner-Kaprun power scheme, Austria (A) 578
More about Finlarig (A) 579
Tri-Dam project dedicated (A) 754

POWER PLANTS—INDUSTRIAL. *See also* POWER PLANTS—GAS-TURBINE
Allocation of heat in an industrial power plant—a practical approach 743
Performance prediction for a process heat-and-power complex by resistance concept (A) 775

POWER PLANTS—NUCLEAR. *See also* COOLING SYSTEMS, CORROSION, GAS TURBINES, PIPE AND PIPING, PRESSURE VESSELS, PUMPS, STRUCTURES, THERMODYNAMICS, VALVES
ASME joins other societies planning 1957 nuclear congress 114
Atomic energy report (A) 947
Basic equations for predicting performance of a nuclear power plant pressurizer (A) 473
Boiling-water reactor program (A) 177
Control problems in sodium-cooled graphite-moderated reactors (A) 475, 749
Control-rod and drive mechanism for the engineering test reactor (A) 769
Design and construction problems of APPR-1 (A) 769
Design and testing of containment provisions for the engineering test reactor (A) 973
Design of reactor systems for safety 251
Development of a universal type control drive mechanism for nuclear reactors (A) 475
Dresden boiling-water reactor (cond.) 238
Engineering and construction of the engineering test reactor Part I (A) 476, Part II (A) 769
Engineering considerations in nuclear reactor design 231
Engineering test reactor (A) 944
Enrico Fermi fast-breeder reactor 240
Experimental Breeder Reactor II (A) 33
EBR-II control system (A) 476
EBWR in operation (Ed) 223
Experimental nuclear reactor (A) 32
5000-kw nuclear power plant (A) 268
4th Nuclear Engineering and Science Conference, 1958 1200
Fuel-handling system for a fast breeder reactor (A) 475
Gas-cooled reactor for ships (A) 946
"Glossary of terms in nuclear science and technology" announced 1194
Heavy-water power reactor study (A) 33
Highlights of combined New York nuclear meetings 1187
Indian Point pressurized-water reactor (cond.) 233
More U. K. nuclear power projects (A) 471
Nuclear briefs 270, 367, 463, 565, 668, 763, 873, 946, 1055, 1154
Nuclear Congress, 1957 501
Nuclear Congress and unity (Ed) 131
Nuclear Congress for 1958 to be held in Chicago 618
Nuclear Congress program lists 39 ASME papers 207

POWER PLANTS (*continued*)
Nuclear energy standards are ISO topic in Geneva 897
Nuclear engineering (Ed) 223
Nuclear engineering—where do we stand? 224, (correction) 593
Nuclear fuel (A) 178
Nuclear power for ship propulsion (A) 1158
Nuclear power in Britain (A) 770
Nuclear power plants—how various nuclear-reactor systems are being applied commercially to steam generation of electric power 233
Nuclear power trends (A) 1160
On the design of a liquid-metal-heated bayonet-tube steam generator (A) 973
Package power reactor (A) 563
P. A. R. homogeneous reactor 242
Pennsylvania advanced reactor—process description (A) 1161
Preliminary operation—Shippingport Atomic Power Station (A) 770
Prospect for economic atomic power (A) 770
Radiation-hazard control for a power reactor 253
Reactor control by spectral shift (A) 1153
Refueling boiling-water reactors (A) 34
Refueling systems for boiling-water reactors (A) 771
Second Nuclear Engineering and Science Conference proceedings published 1195
Should standards be developed for industrial use of nuclear energy? (A) 111
Small nuclear plants of major importance in over-all atomic-energy program 111
Sodium-graphite reactor 245
Standardization problems of a reactor design 248
Symposium on engineering aspects in nuclear field, 1957 397
Thermal conductivity of insulating materials for use in nuclear reactors (A) 1071
U. S.-U. K. nuclear power tie-up (A) 471
Variable moderator control for reactors (A) 1149
Yankee pressurized-water reactor 236

POWER PLANTS—STEAM. *See also* COAL, POWER PLANTS—INDUSTRIAL POWER SYSTEMS, STEAM CONDENSERS, STEAM TURBINES
Automatic digital-data-collecting system for use in central stations (A) 772
Coal-fired power station for South Yorkshire (A) 767
Controlled starting and loading of modern power stations (A) 1160
Cooling towers for steam-electric stations—selection and performance experiences (A) 191
Design considerations in the development of a cyclone-fired boiler installation (A) 1162
Eddystone plant employs supercritical-pressure cycle 132
450,000-kw generating unit (A) 174
Martins Creek Steam Electric Station—new ideas to reduce cost of construction and of operation (A) 1160
Station design considerations in evaluating selection of fuels (A) 583
Steam-generating unit analyzer (A) 172
Studies on air-pollution control by Southern California Edison Company (A) 773
Supercritical generator (A) 660, (correction) 872
Unusual features of the Portland Combustion control system (A) 1162

POWER PRESSES
6000-ton wheel press (A) 373
Approach to the selection of steam unit size for a large hydro-steam system (A) 967
Computer application in forecasting daily peak loads for an electric utility (A) 568
England and France linked electrically (A) 1059
Further steam-electric-generation expansion in Southern California (A) 772
Information center with automatic logger and scanner (A) 483
New type automatic dispatching system at Kansas City (A) 483

POWERS, J. J., JR.
Analysis of energy exchange between man and his environment 1029

PRANDTL NUMBER. *See* FLOW OF FLUIDS

PRATT, PERCY PAUL
Obituary 328

PRATT, PERRY WALTER
Biography 70
Receives Westinghouse Gold Medal 70

PRATT, R. L.
Analysis of energy exchange between man and his environment 1029

PRESSES. *See* METAL DRAWING

PRESSURE VESSELS
Fabricated pressure piping as related to nuclear applications (A) 474
Failure of a welded drying drum (D) 684
Nuclear-reactor shell stresses (A) 31
Overstrain and bursting strength of thick-walled cylinders (A) 1063
Requirements for fabrication of pressure piping as related to service (A) 1171

PRESSURIZERS. *See* COOLING SYSTEMS, POWER PLANTS—NUCLEAR

PRICE, FLOYD URE
Obituary 916

PRICE, GWILYM A.
Awarded honorary LLD degree at Bucknell University 815

PRICE, L. C.
Simple formula for determining the position of maximum slider velocity in a slider-crank mechanism (A) 589

PRINCE, DAVID CHANDLER
Biography 619
Elected Fellow of ASME 619

PRIVON, G. T.
Transient heat flow determination of the thermal properties of clay (A) 377

PROCTOR, J. H.
Applicability of clad steels to heavy wall piping (A) 474

PROCTOR, REDFIELD
Obituary 716

PRODUCTION CONTROL
Systems design for production-control data processing (A) 584

PRODUCTION ENGINEERING. *See* MANUFACTURING

PROHL, M. A.
High frequency vibration of steam-turbine buckets (A) 191
Method for calculating vibration frequency and stress of a banded group of turbine buckets (A) 190

PROJECTORS. *See* PHOTOGRAPHY

PROMISEL, N. E.
Titanium-sheet-rolling program 1112

PROPERTIES OF MATERIALS. *See also* PETROLEUM REFINING, PHOTOELASTICITY, RADIATION
Purdue establishes research center to study thermophysical properties 505

PROSSER, JOSEPH GEORGE
Obituary 716

PSYCHOLOGY
Psychological tests (D) 496

PUDER, R. W.
Fork truck stability—a study in moments (A) 379

PUISHES, A.
Prospects for economic atomic power (A) 770

PULSATION. *See* VIBRATION

PULVERIZED COAL
Utilization of lignite; a comparison between spreader-stoker and pulverized-lignite firing in steam generation 23, (D) 888

PUMPS
Cast stainless pumps for corrosive environments (A) 757
5000-gpm electromagnetic and mechanical pumps for the EBR-II sodium system (A) 474
Pump selection and application (BR) 593
Pumps for nuclear power plants (A) 474

PUMPS—CENTRIFUGAL. *See also* IMPELLERS
Standardization of centrifugal chemical pumps (A) 878

PUMPS—JET
Experimental and analytical study of two-component two-phase flow in an ejector with condensation (A) 962
Jet-pump theory and performance with fluids of high viscosity (A) 186

PURVES-SMITH, CLAUDE DALE
Obituary 916

Q

QUALITY CONTROL
Statistical quality control for small plants 652

QUINN, J. D.
Developments in the analysis of maintenance problems 931

R

RADAR. *See also* INFRARED
Automatic diesel power plant for use in radar systems (A) 358
Experimental radar station (A) 179
True tracking radar (A) 864

RADCLIFFE, B. M.
Design of timber roof truss with nail-glued connections (A) 379

RADFORD, GEORGE STANLEY
Obituary 424

RADIATION. *See also* HEAT TRANSFER
Man and his thermal environment 1029
Measurements of the total absorptivity for solar radiation of several engineering materials (A) 880
Use of ionizing radiations in control of parasitic infections (A) 477

RADIOACTIVITY
AEC radiation regulation (A) 367
Conference on radiation hazards to mankind held in New York 401
Engineering approach to radiological contamination 920
Neutron radiation effects on tensile and impact properties of ASTM-A302B steel 261, (D) 781
Radiation-hazard control for a power reactor 253

RADIOGRAPHIC INSPECTION
Radiographic inspection of lead linings during fabrication (D) 686
Use of atomic energy in the testing of materials 258, (D) 782

RAHE, WILLIAM CLARENCE
Obituary 328

RAILROAD BRAKES
Air brakes for high-speed ultra-light-weight passenger trains 553

RAILROAD CARS. *See also* TRANSPORTATION
Air springs (A) 272
Aluminum in freight cars (A) 674
Corrosion prevention of railroad cars (A) 674
Effect of improved draft gears and spring-dampened trucks on freight-car shocks (A) 380
Evaluation of railway draft gears (A) 675
Expanding use of aluminum in railroad cars (A) 674
Progress in railway mechanical engineering—1955–1956 140
"Roller freight" needs better trucks (A) 675
Special car for high, wide, and heavy shipments (A) 682

RAILROAD MECHANICAL ENGINEERING
Progress in railway mechanical engineering—1955–1956 140

RAILROAD RAILS
Rail conditioning to reduce wheel slippage (A) 178

RAILROAD TRAINS
Air brakes for high-speed ultra-light-weight passenger trains 553
Progress in railway mechanical engineering—1955–1956 140

RAILROADS
Importance of the mechanical engineer to the railroad industry 929
Use of atomic energy in the testing of materials 258, (D) 782

RAMBERG, WALTER
Receives Richard L. Templin Award 1181

RAMSDEN, JOHN THOMAS
Obituary 128

RAMSEY, R. P.
New concept in engine gas-generator-turbine plant (A) 478

RANDALL, MERWYN C.
Obituary 532

RANKIN, A. W.
Austenitic steels in high-temperature steam piping (A) 484

RANSOHOFF, NATHAN
Obituary 218

RASHWAN, A.
Effect of a logarithmic element in an otherwise linear process-control system (A) 49

RASSWEILER, CLIFFORD F.
Receives Research Institute Medal 1188

RAYMO, A. J.
Power reactor containment vessels (A) 477

REA, S. E.
Transient air temperatures in a duct (A) 186

REACTORS. *See* GRAPHITE. POWER PLANTS—NUCLEAR

REASER, WILLIAM E.
Appointed Assistant Secretary of ASME 810

REED, E. C.
Influence of various grinding conditions upon residual stresses in titanium (A) 479

REED, GLENN, A.
Yankee pressurized-water reactor (cond.) 236

REED, N.
Turbocharging development for loop-scavenged two-cycle gas engines (A) 678

REFRACTORIES
Carbide-coated graphite (A) 1155
New basic refractory for open-hearth steel furnaces (A) 662
New materials that the design engineer should know about 720

REFRIGERATION
Expansion engine for gas liquefication 870
Vapor refrigeration; simple type for environmental test chambers (A) 665

REFUSE DISPOSAL
Design criteria for municipal incinerators (D) 388

REICH, J. A.
Information center with automatic logger and scanner (A) 483

REICHENBACH, G. S.
Experimental measurement of metal-cutting temperature distributions (A) 774

REINDL, H. J.
New materials that the design engineer should know about—coatings and finishes 730

REISSNER, ERIC
Finite twisting and bending of thin rectangular elastic plates (A) 884

REITER, BELA ZOLTAN
Obituary 1108

REITER, SYDNEY H.
From junior to project engineer 710

RELIABILITY. *See* TESTING

REMER, ROBERT JOHN
Obituary 218

REMOTE CONTROL
Remote-control telemetering (A) 466

RENNER, ROLAND B.
Obituary 828

RENSHAW, E.
Use of heavy fuel in high-speed diesel engines on river towboats (A) 676

RESEARCH
Arnold Engineering Development Center 8
Bearing and lubricant center (A) 38
Control of research and development to meet company objectives (A) 584
Engineering research leads (A) 1152
How is the research dollar spent? 747
How technical skill of young men rescued paint industry 1188
Research notes 405
Results of U.S. government research available to science and industry 304
Sputniks (A) 1145
U. S. Rubber opens new research center 1081

REUTER PETER THEODORE
Obituary 218

REYNOLDS, R. W.
Chromium plating development at the U. S. Naval Engineering Experiment Station (A) 677

REYNOLDS EQUATION. *See* LUBRICATION

RICE, CYRUS WILLIAM
Obituary 828

RICH, GEORGE R.
Foundations: design and practice (BR) 976

RICH, T. A.
Characteristics of air-borne particles (A) 967

RICHARDS, C. L.
Heat-transfer rates to cross-flowing mercury in a staggered tube bank—II (A) 964

RICHARDSON, D. L.
Skewed boundary-layer flow near the end walls of a compressor cascade (A) 377

RIDLAND, A. C.
40-ft personnel boat with gas-turbine propulsion-engine installation features and operating experience (A) 284

RIESING, ELLWOOD FRANKLIN
Obituary 716

RIGHTMIRE, B. G.
Statistical analysis of a wear process (A) 50

RILEY, W. F.
Experiments for the determination of transient stress and strain distribution in two-dimensional problems (A) 286

RINGLEB, F. O.
Motion and stress of an elastic cable due to impact (A) 886

RIPPERGER, E. A.
Study of the propagation of flexural waves in elastic beams (A) 886

RITCHEY, J. E.
Engineering as a function of management (A) 484

RIVAS, M. A., JR.
Experimental and analytical study of two-component two-phase flow in an ejector with condensation (A) 962

RIVETED JOINTS
Automatic riveting machine (A) 176
Structural damping of a simple built-up beam with riveted joints in bending (A) 383

ROARTY, J. D.
Investigation of burnout heat flux in rectangular channels at 2000 psia (A) 881

ROBB, H. W.
Appointed ASME's representative on ASA Standards Council 708

ROBBINS, FRED A.
Teflon-based piston rings for nonlubricated applications 838

ROBERTS, E. C.
Production engineering of solid-fuel rocket motors 582

ROBERTS, G. S.
Psychological tests (D) 496

ROBERTS, JAMES B.
Obituary 532

ROBERTSON, J. M.
Effect of adverse pressure gradients on turbulent boundary layers in axisymmetric conduits (A) 381

ROBIE, EDWARD H.
Retires as AIME secretary emeritus 108

ROBINSON, A. R.
Thermal drift of floated gyroscopes (A) 1072

ROBINSON, L. E.
Progress report on standardization of the vibratory-cavitation test (A) 185

ROBINSON, S. T.
Influence of working-fluid characteristics on the design of the closed-cycle gas turbine (A) 580

ROCK BITS. *See* PETROLEUM-WELL EQUIPMENT

ROCKETS
Production engineering of large liquid-fuel rocket engines (A) 582
Production engineering of solid-fuel rocket motors (A) 582

ROGERS, HARRY STANLEY
Obituary 1010

ROHRMANN, CHARLES A.
Process engineering problems in Hanford separation plants 634

ROLAN, G.
Development of a universal type control drive mechanism for nuclear reactors (A) 475

ROLLER BEARINGS. *See* ANTIFRICTION BEARINGS

ROLLING MILLS
Aluminum sheet and plates (A) 661

ROLLS
Roll bending applied to rubber and plastic calenders (A) 293

RONGVED, L.
Dislocation over a bounded plane area in an infinite solid (A) 589
Force in the plane of two joined semi-infinite plates (A) 1167

ROOME, GEORGE R. S.
Obituary 916

ROOS, H. W.
Human factors in engineering manage-ment (D) 687

ROSE, ANDREW H., JR.
Design criteria for municipal incinerators (D) 388

ROSE, CLARENCE EDWARD
Obituary 424

ROSS, E. W., JR.
On the plane plastic flow of an inset block (A) 972

ROSS-CLUNIS, H. A.
Sodium-graphite reactor 245

ROSSHEIM, D. B.
Fabricated pressure piping as related to nuclear applications (A) 474

ROSSHEIM (*continued*)
Requirements for fabrication of pressure piping as related to service (A) 1171

ROTHBART, H. A.
Numerical method for determining cam-follower response (A) 1168

ROTORS. *See also* DISKS, GYROSCOPES
Investigation of the generator rotor burst at the Pittsburgh Station of the Pacific Gas and Electric Company (A) 1162
Operating experience with high-temperature steam rotors and design improvements in rotor blade fastening (A) 1161

ROTRIK, J. R.
Ceramic and carbide tool performance tests—Part II (A) 967

ROWLEY, D. S.
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings (A) 482

ROWLEY, LOUIS N., JR.
Biography 815
Nominated for Director (Administrative) 815

ROY, G. M.
Dresden boiling-water reactor (cond.) ... 238

RUBBER. *See also* ROLLS
Conductive silicone rubber (A) 571
New materials that the design engineer should know about 720
Synthetic rubber (A) 661

RUBBER INDUSTRY
Role of the mechanical engineer 16

RUPP, J. W.
Mechanical design approach to simplified maintenance (A) 681

RUSSIA
IEC meeting held in Moscow 895
U. S. must meet USSR challenge to maintain strength, progress (A) 1082

RUTKOWSKI, J.
Free convection from heated surfaces—laminar boundary waves (A) 583

RYAN, WILLIAM FRANCIS
President of ASME for 1957 92
Receives honorary membership in Pi Tau Sigma 507
Toward unity? (Ed) 631
Your future demands a survey of the engineering profession 1037

RYDER, F. L.
Personality factors in engineering practice (A) 974

S

SAATHOFF, GEORGE WEBSTER
Obituary 218

SABROFF, A. M.
Cold extrusion of unalloyed titanium (A) 378

SACHS, GEORGE
Honored by two German societies; awarded Gauss Medal and Heyn Medal 1181

SAFETY ENGINEERING. *See also* FIRE PREVENTION, WINDSHIELDS
Design of reactor systems for safety 251
Designing safe installations for inert-gas machines (A) 1170
Radiation-hazard control for a power reactor 253
Safe automobile—a special design (A) ... 1150
Safety standards 138

SAFETY VALVES
Surface-controlled subsurface safety device for offshore locations (A) 1066

SAGE, W. L.
Multifuel firing of cyclone furnaces (AC) 194

SAHLMANN, F. L.
Dual-powered high-speed locomotive ... 341, 1074

SAIBEL, E.
Effect of heat conductance on slider-bearing characteristics (A) 776
Effect of lubricant inertia in journal-bearing lubrication (A) 971
Surface deformations in the hydrodynamic slider-bearing problem and their effect on the pressure development (A) 1164

ST. LAWRENCE, JOHN
Obituary 1012

ST. VENANT'S PRINCIPLE. *See* MATHEMATICS

SAMS, JAMES H.
Member of the 1957 ASME Council ... 94
Receives Distinguished Service Certificate of NCSBEE 1182

SANBORN, EVERETT RUSSELL
Obituary 916

SANDING. *See* WOODWORKING

SANDWICH CONSTRUCTION. *See* STRUCTURES

SATELLITES. *See* EARTH SATELLITES

SAWMILLS. *See also* WOODWORKING MACHINERY
Handbook for small sawmill operators published 213

SAWS. *See* WOOD INDUSTRIES

SCANLAN, J. A.
Bibliography on free-piston engines and compressors 339

SCHABTACH, C.
Investigation of the generator rotor burst at the Pittsburgh Station of the Pacific Gas and Electric Company (A) 1162

SCHACKELFORD, B. W.
Approach to the selection of steam unit size for a large hydro-steam system (A) 967

SCHAFER, R. A.
Development of the Natco feed-rate indicator (A) 589

SCHAKEL, R. A.
Proved concepts in oil field roller chain drive selection (A) 1066

SCHANZ, J. L.
Dresden boiling-water reactor 238

SCHECTER, R. S.
Natural convection heat transfer in regions of maximum fluid density (A). 1068

SCHEIL, M. A.
Steel for Canadian pipelines 853

SCHIER, O. B., 2ND
Appointed deputy secretary of ASME ... 115
Named secretary-elect of ASME 698

SCHILHANSL, M. J.
Bending frequency of a rotating beam (A) 1167

SCHMIDT, A. O.
Ceramic and carbide tool performance tests (A) ..... Part 1, 184; Part II, 967
Coefficients of flat-surface friction 1130

SCHNEIDER, P. J.
Review of heat-transfer literature—1956 433

SCHNEIDER, WARREN A.
Design criteria for municipal incinerators (D) 389

SCHOLARSHIPS. *See* EDUCATION

SCHREIBER, HAROLD A.
Obituary 128

SCHREIBER, JOHN W.
Obituary 424

SCHWARTZENBERG, J. W.
Analog study of a high-speed recording servomechanism (A) 586

SCIENCE
AAAS acts on resolution submitted by committee on social aspects of science. 199

SCREENS
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes (A) 377

SCREWS
Screw parts washer (A) 951

SCUTT, E. D.
Unusual features of the Portland combustion control system (A) 1162

SEA WATER. *See* DISTILLATION

SEALS
Mechanical seals for nonlubricating hydrocarbons (A) 1067
Oil seals to provide positive lubrication on large or high-speed thrust bearings (A) 774

SEAMES, A. E.
Numerical procedure for calculating the large deflections of straight and curved beams (A) 286

SEANOR, R. C.
Roll bending applied to rubber and plastic calenders (A) 293

SEARING, HUDSON ROY
Obituary 1108

SEARLE, A.
How to drill 6 Al-4V titanium alloy 1025

SEBAN, R. A.
Heat transfer to laminar boundary layers with variable free-stream velocity (A) 376
Heat transfer to lead-bismuth in turbulent flow in an annulus (A) 187

SEEBE, NOEL B.
Accuracy requirements of Graflex 70-mm combat focusing system (A) 486

SEGE, G.
Dresden boiling-water reactor (cond.) ... 238

SEGUIN, B. R.
Investigation of the generator rotor burst at the Pittsburgh Station of the Pacific Gas and Electric Company (A) 1162

SEIDE, PAUL
Donnell type theory for asymmetrical bending and buckling of thin conical shells (A) 972

SEIM, O. S.
5000-gpm electromagnetic and mechanical pumps for the EBR-II sodium system (A) 474

SELIG, FRANCES
Completes 50 years at ASME 412

SEMAR, H. W.
Experimental determination of gear tooth stresses in large marine gears (A) 290

SERABIAN, S.
Ultrasonic detection of thin laminar inclusions (A) 1161

SERVOMECHANISMS. *See also* VALVES
Analog study of a high-speed recording servomechanism (A) 586
Analysis of the transient response of nonlinear control systems (A) 586
Design basis for cascade-type positional servomechanisms (A) 189
Practical aspects of relay or pulse servomechanisms (A) 585

SETTY, S. K.
Stresses alter hardness 1127

SEVIN, E.
Min-max solutions for the linear mass-spring system (A) 287

SEWARD, J. E.
Fuel-handling system for a fast breeder reactor (A) 475

SEYFANG, WILLIAM GEORGE
Obituary 128

SHAFFER, B. W.
Displacements in a wide curved bar subjected to pure elastic-plastic bending (A) 884

SHANK, M. E.
Flow and fracture of nodular cast iron (A) 188

SHANNON, J. E.
Preventive maintenance plan for gas-products plants and related operations (A) 771

SHARMA, R. L.
Dependence of the frequency spectrum of a circular disk on Poisson's ratio (A) 486

SHAYNE, ALEXANDER
Obituary 1108

SHEARER, DAVID ROBERT
Obituary 628

SHEARER, J. L.
Pressure-flow characteristics of pneumatic valves (A) 189

SHEET METAL. *See* METAL ROLLING

SHELL MOLDING. *See* FOUNDRY PRACTICE

SHELLS
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness (A) 885
Behavior of cylinders with initial shell deflection (A) 970
Buckling of initially imperfect cylindrical shells subject to torsion (A) 382
Buckling of thin cylindrical shell under hoop stresses varying in axial direction (A) 970
Cylindrical shells under line load (A) 970
Deformation of elastic paraboloid shells of revolution (A) 885
Donnell type theory for asymmetrical bending and buckling of thin conical shells (A) 972
General instability of a ring-stiffened, circular cylindrical shell under hydrostatic pressure (A) 383

SHEPPARD, R.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines (A) .. 483

SHERBROOKE, W. A.
Air and gas duct system for the gas-turbine vessel John Sergeant (A) 284

SHERBY, O. D.
Effect of stress on creep at high temperatures (A) 285

SHERMAN, R. A.
Heat transfer by radiation from flames (A) 374

SHIMAZAKI, T. T.
Heat-transfer considerations in the use of organic reactor coolants (A) 473

SHINBROT, M.
Optimization of time-varying linear systems with nonstationary inputs (A) 588

SHIP-MODEL TESTING
Re-equipping a ship-model basin (A) 280

SHIPS. *See also* COAL HANDLING, MARINE ENGINEERING, POWER PLANTS—NUCLEAR
Gas-cooled reactor for ships (A) 946
Nuclear-powered cruiser (A) 464

SHIRLEY, H. T.
Eight years of experience with inert gas equipment (A) 1067

SHOCKS. *See* WAVE MECHANICS

SHORT, R. D., JR.
Behavior of cylinders with initial shell deflection (A) 970

SHOT-PEENING
Influence of repeated bending loads on biaxial residual stresses in shot-peened plates (A) 188

SHULESHKO, P.
Buckling of rectangular plates with two unsupported edges (A) 1072

SHUMAKER, C. H.
Member of 1957 ASME Council 94

SHUTTLES. *See* TEXTILE INDUSTRY

SIEGEL, ROBERT
Transient free convection from a vertical flat plate (A) 881

SIEGGREEN, H. G.
Shell castings—typical examples of their applications 560

SILER, WILLIAM AUGUSTUS
Obituary 321, 532

SILICON
Automatic zone refining of silicon (A) ... 954

SILICONES
Conductive silicone rubber (A) 571
Silicone insulation (A) 365
Supersonic safety glass for airplane windshields (A) 175

SILVERBERG, M.
Gas coolant for nuclear reactors (A) 473

SIMCOE, CHARLES R.
New materials that the design engineer should know about—metallic materials 720

SIMKOVICH, E. A.
Metallic material engineering and manufacturing aspects of new high-speed aircraft (A) 681

SIMMONS, F. C.
Handbook for small sawmill operators published 213

SIMPSON, JOHN WISTAR
Receives Prime Movers Committee Award 73

SINES, G.
Failure of a welded drying drum by caustic embrittlement (AC) 686

SINGER, SIDNEY CHARLES
Obituary 128

SINTERING
Rapidly expanding process for the iron and steel industry (A) 35

SIPPLE, H. B.
The hot airplane 925

SIZER, P. S.
Surface-controlled subsurface safety device for offshore locations (A) 1066

SKALAK, R.
Longitudinal impact of a semi-infinite circular elastic bar (A) 287

SKIBA, WILLIAM
Second look at radiographic inspection of lead linings during fabrication (AC). 687

SKIDDING. *See* AIRPLANES

SKINNER, J. B.
Toxicity of materials—of interest to the mechanical engineer (A) 287

SKINNER, S. M.
Electrical effects accompanying the stick-slip phenomenon in boundary lubrication (A) 292

SLABS. *See* STRUCTURES

SLATER, J. M.
Gyroscopes for inertial navigators 832
Measurement and integration of acceleration in inertial navigation (A) 384

SLEICHER, C. A., JR.
Experimental velocity and temperature profiles for air in turbulent pipe flow (A) 1071

SLIBAR, A.
Forced lateral oscillations of trailers (A) . 883
On the theory of grease-lubricated thrust bearings (A) 52

SLOANE, REGINALD GORDON
Obituary 1216

SLURRIES
Engineering design, testing, and operation of the Gilsonite solids pipeline (A) 1171

SMITH, E. H.
Burning fluid coke (AC) 388

SMITH, G. V.
Chromium-molybdenum and chromium-molybdenum-vanadium steels for power plant and refinery service up to 1100 F (A) 591

SMITH, GEORGE WILLIAM
Progressive management in plywood manufacturing 539

SMITH, J. A.
Test equipment for use in diesel engine maintenance (A) 675

SMITH, L. H., JR.
Recovery ratio—a measure of the loss recovery potential of compressor stages (A) 478

SMITH, RONALD B.
Biography 814
Nominated for Director (Technology) .. 814

SMITH, V. WEAVER
Member of 1957 ASME Council 94

SMOKE, EDWARD J.
New materials that the design engineer should know about—ceramics and refractory materials 725

SNAPP, R. B.
Testing dynamically loaded bearings
I. A short history of bearing test machines (A) 52
II. A diesel-engine bearing test machine (A) 51

SOBOCINSKI, D. P.
Current flow of air, gas-oil, and water in a horizontal pipe (A) 384

SODERBERG, C. R., JR.
Fabricated pressure piping as related to nuclear applications (A) 474
Requirements for fabrication of pressure piping as related to service (A) 1171

SOGIN, H. H.
Laminar mass and heat transfer from ellipsoidal surfaces of fineness ratio 4 in axisymmetrical flow (A) 880
Sublimation from disks to air streams flowing normal to their surfaces (A) ... 291

SOHL, G. M.
Electrical effects accompanying the stick-slip phenomenon in boundary lubrication (A) 292

SOLAR ENERGY. *See also* RADIATION
NBS solar furnace (A) 762
The solar engine; an analysis 445
Solar furnace (A) 41
Solar furnace (D) 386
Solar Furnace Symposium, January, 1957 108
Solar heat for a building 536
Solar water heating—present practices and installations (A) 773
Some aspects of solar-energy economics (A) 773

SOLDERING
Aluminum soldering (A) 1155
Ultrasonic soldering iron (A) 41

SOLNICK, R. L.
Effect of intake combustion-air conditioning on performance of spark ignition gas engines (A) 678

SOLOMON, EDWARD
Obituary 532

SOMERS, J. C.
Dust and fume control 1022
Materials handling in product finishing (A) 379

SOO, S. L.
Dynamic response characteristics of gas turbines (A) 1166
Laminar flow over an enclosed rotating disk (A) 968
New concept in engine gas-generator-turbine plant (A) 478

SOULE, J. W.
Tensor flexibility analysis of closed-loop piping systems (A) 1072

SPACISTOR. *See* ELECTRONICS

SPAHR, J. C.
Eddystone superpressure unit 132

SPARROW, E. M.
Similar solutions for free convection from a nonisothermal vertical plate (A) 881

SPAUNBURG, HARVEY L.
Receives honorary membership in Pi Tau Sigma 507

SPEER, P.
Materials handling of bulk materials in the meat-packing industry (A) 378

SPENCER, FRANK CALVIN
Obituary 716

SPORCK, C. L.
Floturn—a production process as well as a development (A) 967

SPRAYS. *See* DRYING

SPRINGS
Air springs (A) 272
Min-max solutions for the linear mass-spring system (A) 287

SPURRIER, F. R.
Designing the marine gas turbine 860

STALL. *See* AERODYNAMICS

STALZER, T. R.
Criteria for validity of lumped-parameter representation of ducting air-flow characteristics (A) 49

STANDARDS. *See also* SAFETY ENGINEERING
ASA hold first Pacific Coast standards conference 1184
Government support urged in industry standards for goods and services 597
Inter-American manufactured products and raw materials standards on way ... 1085
National standards in a modern economy (BR) 295

STANLEY, R. J.
In-service washing of Ljungstrom air preheaters on pulverized-coal-fired steam generators (A) 380

STANTON, B. D.
Dynamic field tests of a process furnace (A) 586
Dynamic field tests of a steam turbine (A) 586

STARKEY, W. L.
Effects of complex stress-time cycles on the fatigue properties of metals (A) ... 189
Work capacities of energy storage systems on basis of unit weight and unit volume (A) 682

STARTING. *See* STEAM TURBINES

STATE PRINCIPLE. *See* THERMODYNAMICS

STATISTICAL METHODS
Statistical analysis of a wear process (A). 50
Statistical treatment of sampled-data control systems for actual random inputs (A) 585

STAUFFER, RALPH DANIEL
Obituary 532

STEAM CONDENSERS
Condenser at Portland (A) 1163
Horizontal condenser theory—Part I, Mathematical development of tube loading (A) 1068

STEAM PURITY
Conductivity versus sodium by flame spectrophotometer in steam purity studies (A) 480

STEAM TURBINES. *See also* TURBINE TESTING
Design features and development of the cross-compound, single flow turbine with axial exhaust—for the Portland Station (A) 1163
Design of warped buckets for optimum efficiency (A) 588
Dynamic field tests of a steam turbine (A) 586
High frequency vibration of steam-turbine buckets (A) 191
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines 483
Method for calculation vibration frequency and stress of a banded group of turbine buckets (A) 190
Operating experience with high-temperature steam rotors and design improvements in rotor blade fastening (A) 1161
Use of digital computers in the mechanical design of large steam turbines (A).. 288

STEEL. *See also* IRON AND STEEL MANUFACTURE
Applicability of clad steels to heavy wall piping (A) 474
Austenitic steels in high-temperature steam piping (A) 484
Creep characteristics of type 347 stainless steel at 1050 and 1100 F in tension and compression (A) 188
Delayed-yield time effects in mild steel under oscillatory axial loads (A) 188
Force components, chip geometry, and specific cutting energy in orthogonal

STEEL (*continued*)
and oblique machining of SAE 1015 steel (A) 480
Nonhomogeneous yielding of steel cylinders; 1-mild steel (A) 188
Pipeline steels—a review of the industry. 448
Steel for Canadian pipelines 853
Ultra-high-strength steel (A) 756

STEEL ALLOYS
Chromium-molybdenum and chromium-molybdenum-vanadium steels for power plant and refinery service up to 1100 F (A) 591
Eight years of experience with austenitic-steel piping materials at elevated steam conditions (A) 290
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (A) 289
Neutron radiation effects on tensile and impact properties of ASTM-A302 B steel 261, (D) 781
Rapid analysis of steel (A) 280

STEELE, A. M.
Design and development of the coolant system for the sodium reactor experiment (A) 472

STEELE, M. C.
Nonhomogeneous yielding of steel cylinders; 1-mild steel (A) 188

STEELE, WALTER DAVID
Obituary 532

STELZ, FRANK F.
Obituary 628

STENNING, A. H.
Stall propagation in a cascade of airfoils (A) 968

STEPHENS, T. E.
Engineering and construction of the engineering test reactor—Part II (A) 769

STEREOSCOPY
Techniques of drawing in the third dimension (A) 588

STERNBERG, E.
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness (A) 885

STERNLICHT, B.
Application of digital computers to bearing design (A) 288
Self-excited vibrations of an air-lubricated thrust bearing (A) 1163
Theoretical and experimental analysis of hydrodynamic gas-lubricated journal bearings (A) 1164

STETSON, GEORGE A.
Editor emeritus of the Society's periodical publications 2
The next hundred years (BR) 1174
Professional amateur: the biography of Charles Franklin Kettering (BR) 498

STEVENSON, HARRY WILLIS, JR.
Obituary 1108

STICK-SLIP PHENOMENA. *See* FRICTION

STOKERS. *See also* FUELS

STORAGE
Blueprints reproduced photographically (A) 178

STOVER, ROLLAND S.
Member of 1957 ASME Council 94

STRACKE, F. H.
Burning fluid coke (D) 387

STRAIGHT, HALVER RUFUS
Obituary 328

STRANG, W. G.
Improvement of the Holzer table based on a suggestion of Rayleigh's (A) 285

STRESSES AND STRAINS. *See also* BEAMS, BUCKLING, CAVITATION, ELASTICITY, GEARS, MATHEMATICS, METAL CREEP, METAL CUTTING, METAL FATIGUE, METAL TESTING, PHOTOELASTICITY, PLASTICITY, VIBRATION
Analysis of residual stress in ground surfaces of high-temperature alloys (A) 774
Analysis of stresses and strains near the end of a crack traversing a plate (A) 973
Comparison of semi-empirical solutions for crack propagation with experiments (A) 682
Experiments for the determination of transient stress and strain distribution in two-dimensional problems (A) 286
Force in the plane of two jointed semi-infinite plates (A) 1167
Impact stresses in drop-hammer guides (A) 588
Influence of repeated bending loads on biaxial residual stresses in shot-peened plates (A) 188
Nuclear-reactor shell stresses (A) 31

STRESSES AND STRAINS (*continued*)
On the stress distribution at the base of a stationary crack (A) 284
The sector problem (A) 776
Shear-zone temperature in metal cutting and its effects on shear-flow stress (A) 774
Stress concentrations in a strip under tension and containing two pairs of semicircular notches placed on the edges symmetrically (A) 885
Stress distributions in rotating disks subjected to creep including effects of variable thickness and temperature (A) 383
Stress effects of rotary straightening on collapse resistance of high-strength casing (A) 1060
Stress-strain relations and vibrations of a granular medium (A) 776
Stresses alter hardness 1127
Stresses and displacements in an elastic-plastic wedge (A) 382
Stresses in a perforated strip (A) 776
Theoretical criterion for the fracture of metals under combined alternating stresses (A) 486

STRINGS. *See* VIBRATION

STRIPS. *See* PLATES

STRUCTURES. *See also* BEAMS, PLATES, SHELLS
Attaching sandwich components (A) 1154
Containment for the EBWR (A) 477
Power reactor containment vessels (A) 477
Structural damping of a simple built-up beam with riveted joints in bending (A) 383
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate (A) 885
Yield loads of slabs with reinforced cutouts (A) 382

STYS, Z. STANLEY
Gas turbines for the chemical industry (A) 582

SULLIVAN, GEORGE L.
The California Water Plan 858

SUNDBERG, C. O.
Proved concepts in oil field roller chain drive selection (A) 1066

SUPERCHARGERS
Design features of a gas turbine for a supercharged boiler (A) 1166
Turbocharging development for loop-scavenged two-cycle gas engines (A) 678

SUPERCRITICAL PRESSURE. *See* WATER

SUPERSONIC FLOW. *See* NOZZLES

SUPERVISION. *See* FOREMAN TRAINING

SURFACE FINISH. *See also* LUBRICATION, METAL FINISHING
Surface roughness—a criterion for minimum hydrodynamic oil-film thickness of short journal bearings (A) 50

SURGES. *See* PETROLEUM PIPELINES

SUTTON, G. W.
Photoelastic study of strain waves caused by cavitation (A) 886

SWANSON, T. M.
Failure of a welded drying drum (D) 685

SYBERT, W. M.
Engineering and construction of the engineering test reactor—Part II (A) 769

SYLVANDER, N. E.
Multifuel firing of cyclone furnaces (D) 193

SYNTHETIC PRODUCTS. *See* RUBBER

SZEKELY, ERNEST
Obituary 328

T

TABER, RICHARD D.
Teflon-based piston rings for nonlubricated applications 838

TAMATE, OSAMU
Effects of a circular hole on the pure twist of an infinite strip (A) 286

TAYLOR, C. F.
Heat transfer in internal-combustion engines (A) 961

TAYLOR, DEWITT MCCLURE
Obituary 220

TAYLOR, IRVING
Pump selection and application (BR) 593

TAYLOR, J. H., JR.
Heat transfer from a rotating disk in turbulent flow (A) 375

TEA, P. L.
Model method for determining geometric factors in solid-to-solid radiation heat transfer (A) 880

TECHNICAL WRITING
Bad technical writing (A) 1153
Technical ghostwriting 348

TECHNOLOGY
U.S. must meet USSR challenge to maintain strength, progress (A) 1082

TEFLON
Teflon-based piston rings for nonlubricated applications 838

TEITELBAUM, PERRY D.
Trends and prospects in coal 550

TELEDELTOS. *See* ELECTRIC ANALOGY

TELEVISION
Closed-circuit 3-D color TV (A) 871

TEMPLATES. *See* PHOTOGRAPHY

TENNEY, R. F.
Thermal stabilization of anthracite by calcination (A) 1170

TER LINDEN, A. J.
Application of gas/liquid cyclones in oil refining (A) 385

TEST, F. L.
Study of heat transfer and pressure drop under conditions of laminar flow in the shell side of cross-baffled heat exchangers (A) 963

TESTING. *See also* BEARINGS, COMBUSTION, COMPRESSORS, INSTRUMENTS, METALLOGRAPHY, MISSILES, RADIOGRAPHIC INSPECTION, SHIP-MODEL TESTING, TURBINE TESTING
Designing equipment for reliability 1142

TESTING MACHINES. *See also* METAL TESTING—FATIGUE
Coefficients of flat-surface friction 1130

TEXTILE INDUSTRY
D-c braking of a-c motors in the textile industry (A) 1168
Modern adjustable-speed drives for textile machinery (A) 1168
Modern textile motors (A) 1169
Power drives for warp-preparation machines (A) 1168
Powered shuttle for looms (A) 461

THAL-LARSEN, H.
Correlation functions and noise patterns in control analysis (A) 586

THAYER, G. B.
Developments in plastics engineering (D) 782

THEBERT, G. W.
Determination of turbine-stage performance for an automotive power plant (A) 580

THERMAL CONDUCTIVITY. *See* HEAT TRANSFER

THERMAL STRESSES
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness (A) 885
Investigation of thermal stress fatigue as related to high-temperature piping flexibility (A) 483
Time and temperature dependence of thermal stresses in cylindrical fuel elements (A) 477

THERMOCOUPLES. *See* INSTRUMENTS—TEMPERATURE

THERMODYNAMICS
Novel thermodynamics course at Lehigh reviewed at year's end 600
The "state principle"—some general aspects of the relationships among the properties of systems (A) 381
Thermodynamic properties of compressed water 939
Transient thermodynamics of reactors and process apparatus (A) 477

THOMAS, PERCY HOLBROOK
Obituary 628

THOMPSON, J. S.
Some new data on high-speed impact phenomena (A) 285

THOMPSON, WARREN R.
What can the young engineer do to develop professionally? 1202

THOMPSON, WILLIS F.
Biography 619
Elected Fellow of ASME 619

THOMSEN, E. G.
Experimental and theoretical pressures and velocity fields for various lead extrusions (A) 292
New method for the construction of Hencky-Prandtl nets (A) 485
Stresses alter hardness 1127

THORIUM
Thorium and uranium production in France and Madagascar (A) 466

THORNTON, P. R.
On the stagnation of natural-convection flows in closed-end tubes (A) 881

THRONE, R. F.
Utilization of lignite (D) 888

TICE, V. E.
Development of the Natco feed-rate indicator (A) 589

TIMBER. *See* WOOD CONSTRUCTION

TIMBS, EDWARD
Obituary 220

TING, L.
Radial deflections of a cylinder subjected to equal and opposite concentrated radial loads (A) 284

TINKER, TOWNSEND
Shell-side characteristics of shell-and-tube heat exchangers (A) 375

TIPTON, E. W.
Mechanical problems involved in short circuits on core-form power-transformer coils (A) 682

TISCHER, R. G.
Heat processing of foods 922
Heat transfer in canning 924

TITANIUM
Cold extrusion of unalloyed titanium (A) 378
Forming of titanium head shapes (A) 172
How to drill 6 Al-4V titanium alloy 1025
Influence of various grinding conditions upon residual stresses in titanium (A) . 479
160,000-psi titanium alloy (A) 759
Titanium industrial review (A) 170
Titanium-sheet-rolling program 1112

TOBIAS, S. A.
Chatter of lathe tools under orthogonal cutting conditions (A) 774

TOMBAUGH, R. W.
Back extension of heavy-walled Zircaloy-2 cups (A) 590, 936

TONG, L. S.
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes (A) 377

TOONG, TAU-YI
Heat transfer in internal-combustion engines (A) 961

TORQUE. *See* PETROLEUM-WELL EQUIPMENT

TORQUE CONVERTERS. *See* HYDRAULIC DRIVES

TORSION
Torsion and flexure of slender solid sections (A) 1167

TOULOUKIAN, Y. S.
Heat transfer in liquid metals (A) 965

TOURTELLOTTE, M.
Organize your engineering project (A) .. 1172

TOWING TANKS. *See* SHIP-MODEL TESTING

TOWNSEND, S. C.
P. A. R. homogeneous reactor 242
Pennsylvania advanced reactor—process description (A) 1161

TOXICITY. *See* INDUSTRIAL HAZARDS

TRAILERS. *See* MOTOR VEHICLES, TRANSPORTATION

TRANSFORMERS. *See* ELECTRICAL EQUIPMENT

TRANSPORTATION. *See also* RAILROAD CARS
Freight car semitrailer (A) 464
Piggybacks and "trailer-baks" (A) 363
Power-operated trailer coupling (A) 876
Rail-highway co-ordination (A) 675
Trailers in piggy-back operation from a manufacturer's point of view (A) 380

TREADWELL, K. M.
Dynamic response of heat exchangers having internal heat sources—Part I (A) 880

TRIGGER, K. J.
Temperature distribution at tool-chip and tool-work interface in metal cutting (A) 479
Tool-work-thermocouple compensating circuit (A) 479

TROMBE, F.
Solar furnace (D) 386

TROTTER, CLAUD H.
Maintenance organization factors in the modern refinery (A) 47

TRUCKS. *See* INDUSTRIAL TRUCKS, RAILROAD CARS

TSU, T. C.
Thermodynamic properties of compressed water 939

TUBES. *See also* FLOW OF FLUIDS, HEAT TRANSFER
Creep of thick tubes under internal pressure (A) 972

TURBINE TESTING
Turbine overspeed test facility (A) 172
250-megawatt turbine test pit (A) 666

TURBOCHARGERS. *See* SUPERCHARGERS

TURBOJETS. *See* AIRPLANE ENGINES

TURBOMACHINERY. *See* BLOWERS, COMPRESSORS

TURNER, J. R.
Investigation of the end-wall boundary layer of a turbine-nozzle cascade (A) .. 482

TWISS, S. B.
Properties of friction materials
I. Experiments on variables affecting noise (A) 886
II. Theory of vibration in brakes (A) .. 886

U

UECKER, E. H.
Steel for Canadian pipelines 853

ULINSKI, B. I.
Reducing power consumption in hydraulic circuits (D) 495

ULLMAN, J. W.
Decay and storage of irradiated fuel (A) . 475

ULTRASONICS. *See also* NONDESTRUCTIVE TESTING, SOLDERING
Elastic moduli measurement by ultrasonic technique (A) 755
Ultrasonic detection of thin laminar inclusions (A) 1161
Ultrasonic emulsifier (A) 665

UNDERHILL, JEROME S.
First-line supervisors . . how do they spend their time? 353

UNDERWOOD, A. F.
Million pound high-speed dynamic fa[illegible]-test machine (A) 589

UNGER, GERARD EDWIN
Obituary 1216

UNION, D. C.
Dynamic field tests of a process furnace (A) 586
Dynamic field tests of a steam turbine (A) 586

UNITED ENGINEERING CENTER
Action on building fund 1179

UNITED ENGINEERING TRUSTEES
UET report highlights new engineering center in New York 103

UNTERMEYER, S.
Use of boiling water as a reactor coolant (A) 472

URANIUM
Thorium and uranium production in France and Madagascar (A) 466

V

VACUUM DISTILLATION. *See* DISTILLATION

VACUUM MELTING. *See* INDUSTRIAL FURNACES

VACUUM METALLURGY. *See* METALLURGY

VACUUM PUMPS. *See* JET PUMPS

VALVES. *See also* SAFETY VALVES
Application limits and accuracies of control-valve flow coefficient CV (A) .. 49
Characteristics of unevenly underlapped four-way hydraulic servo valves (A) .. 588
Compensation of steady-state flow forces in spool-type hydraulic valves (A) 185
Effect of conduit dynamics on control-valve stability (A) 682
Effects of back pressure on hydraulic oil-control valves (A) 482
On the quality requirements for steel valves for nuclear power plants (A) ... 474
Pressure-flow characteristics of pneumatic valves (A) 180
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings (A) 482

VAN BENSCHOTEN, RICHARD O.
Young mechanical engineer in teaching . 414

VANDERBILT, ARTHUR T.
Obituary (Ed) 719

VAN DONGEN, J. R. J.
Application of gas/liquid cyclones in oil refining (A) 385

VAN DYKE, J. C.
Recent developments in engineered timber construction (A) 379

VAN SICKLE, A. H.
In-service washing of Ljungstrom air preheaters on pulverized-coal-fired steam generators (A) 380

VAN TASSEL, W. M.
Utilization of lignite (D) 888

VAN VALKENBURG, M. E.
Some new data on high-speed impact phenomena (A) 285

VAN VLIET, RICHARD
Effect of heated condenser discharge upon aquatic life (A) 1160

VAPORS. *See* HIGH-TEMPERATURE RESEARCH

VAUGHAN, A. L.
Operating considerations in the application of gas-turbine-driven centrifugal pipeline compressors (A) 46

VIBRANS, F. C.
Variations in marine-engine performance (A) 677

VIBRATION
Bending frequency of a rotating beam (A) 1167
Boiler vibration caused by combustion gas flow (A) 290
Chatter of lathe tools under orthogonal cutting conditions (A) 774
Component fatigue analysis for maintenance 656
Dependence of the frequency spectrum of a circular disk on Poisson's ratio (A) 486
Elongating string under the action of a transverse force (A) 883
Experimental study on chatter vibrations in grinding operations (A) 378
Forced lateral oscillations of trailers (A) . 883
Forced vibration of a body on elastic stratum (A) 382
Forced vibrations of systems with nonlinear, nonsymmetrical characteristics (A) 973
Gas pulsations—the problem, Southern Gas Association's approach, and results (A) 676
High frequency vibration of steam-turbine buckets (A) 191
Method for calculating vibration frequency and stress of a banded group of turbine buckets (A) 190
Natural frequencies of nonuniform beams on multiple elastic supports (A) 1072
Nodal patterns of the free flexural vibrations of stiffened plates (A) 972
Properties of friction materials—II, theory of vibration in brakes (A) 886
Self-excited vibrations of an air-lubricated thrust bearing (A) 1163
Specific damping energy of fixed-fixed beam specimens (A) 972
Stress-strain relations and vibrations of a granular medium (A) 776
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer (A) 970
Type of flame-excited oscillation in a tube (A) 971
Vibration design charts (A) 190
Vibration modes of stators of induction motors (A) 285

VICKERS, HARRY F.
Biography 69
Receives ASME Medal 69
Receives ASTE Progress Award 509

VILLELLA, J.
Use of ionizing radiations in control of parasitic infections (A) 477

VISCOELASTIC MATERIALS. *See* PLASTICS

VISCOMETERS. *See* INSTRUMENTS—VISCOSITY

VISCOSITY. *See* FLOW OF FLUIDS, GASES

VON DER NUELL, W. T.
General design considerations for smaller gas turbines (A) 1165

VON TURKOVICH, R. F.
Ceramic and carbide tool performance tests—Part II (A) 967

VUILLEUMIER, ALBERT
Obituary 220

VULCANIZED FIBER. *See* PLASTICS

W

WAGNER, HARVEY A.
Standardization problems of a reactor design ... 248

WAHL, A. M.
Stress distributions in rotating disks subjected to creep including effects of variable thickness and temperature (A) ... 383

WAITT, L. W.
Manufacturing small engines (A) ... 1166

WALD, G. G.
The hot airplane ... 925

WALKER, A. B.
Experimental investigation of critical design factors for vane-type cyclone collectors (A) ... 590

WALKER, ALEXANDER GEORGE
Obituary ... 424

WALKER, R. D.
Production engineering of solid-fuel rocket motors (A) ... 582

WALLACE, W. D.
Evaluation of railway draft gears (A) ... 675

WALLER, E. J.
Pressure surges in pipelines (A) ... 1064

WALSH, B. R.
Universal bearing tester (A) ... 51

WANG, H.-E.
Corrections for the oscillating-disk viscometer (A) ... 381
Viscosity of five gases: a re-evaluation (A) ... 187

WANGAARD, F. J.
Fire safety of engineered timber construction (D) ... 1075

WARBURTON, G. B.
Forced vibration of a body on elastic stratum (A) ... 382

WARD, F. R.
Indian Point pressurized-water reactor (cond.) ... 233

WARE, D. H.
Electronic data processing machines; controls for design and engineering procedures ... 632

WAREHOUSES
Computer-controlled shipping center (A) ... 1044

WARNER, EDWARD P.
Receives Wright Brothers Memorial Trophy ... 107, 206

WARRINER, W. C.
"Zytel" nylon resin . . a versatile engineering material (AC) ... 498

WATER
Heat transfer to supercritical water (A) .. 963
Thermodynamic properties of compressed water ... 939

WATER FLOODING. *See* PETROLEUM INDUSTRY

WATER SUPPLY
The California Water Plan ... 858
"Package" water plant (A) ... 362

WATEROUS, CHARLES A.
Obituary ... 1012

WATTS, GEORGE ALFRED
Multifuel firing of cyclone furnaces (AC) 194
Obituary ... 328

WAVE MECHANICS
Determination of the equation of state from wave-front observations (A) ... 291
Influence of width on velocities of long waves in plates (A) ... 885
Response of nonlinearly supported spherical boundaries to shock waves (A) ... 886
Study of the propagation of flexural waves in elastic beams (A) ... 886

WAY, G. L.
Computer applications in the power industry (A) ... 968

WAYNE, S. S.
Effect of heavy rainstorms on J47 turbojet operation (A) ... 282

WEAR
Coefficients of flat-surface friction ... 1130
Statistical analysis of a wear process (A). 50

WEAVER, F. L.
High frequency vibration of steam-turbine buckets (A) ... 191

WEAVING, J. H.
The Austin vehicle gas turbine ... 643

WEBB, BAXTER H.
How to analyze the cost of machine tools (D) ... 391

WEBB, RALPH D.
Honorary member of ISA ... 1182

WEBER, ARTHUR W.
Biography ... 813
Nominated for Regional Vice-President. 813

WEBER, H. E.
Head loss in flow through a cyclone dust separator or vortex chamber (A) ... 382

WEBER, OSCAR EMILE
Obituary ... 1108

WEBJORN, JAN
Recent technical and economic developments in Western Europe (D) ... 592
Why is U. S. industry strong? (D) ... 592

WEDGES. *See* STRESSES AND STRAINS

WEHE, R. L.
Properties of misaligned journal bearings (A) ... 50

WEIGHING MACHINES
Weighing and blending with pneumatic belt scales ... 934

WEINBERG, ALVIN M.
Engineering considerations—in nuclear reactor design ... 231

WEINIG, F. S.
New approach to the theory of thin, slightly cambered profiles (A) ... 381

WEINSTEIN, A. S.
Influence of gradient temperature fields on thermocouple measurements (A) .. 960

WEINSTEIN, J. H.
Planning a student section meeting on industrial indoctrination ... 211

WEIR, C. D.
Creep of thick tubes under internal pressure (A) ... 972

WEISNER, E. F.
Sodium-graphite reactor (cond.) ... 245

WEISSGOLD, DAVID JESSE
Obituary ... 828

WEITER, E. J.
Coefficients of flat-surface friction ... 1130

WELANETZ, L. F.
Graphical versus computer techniques—for mechanism analysis (A) ... 383

WELCH, C. P.
Heat transfer to supercritical water (A). 963

WELDED JOINTS
Report on strength of welded joints in carbon steel at elevated temperatures (A) . 1064

WELDING
Austenitic steels in high-temperature steam piping (A) ... 484
Failure of a welded drying drum (D) ... 684
New arc-welding process (A) ... 273
Pipeline steels—a review of the industry ... 448

WELSH, JOHN A.
Biography ... 72
Receives Williston Award ... 72

WELSH, W. E.
Experimental studies of free-convection heat transfer in a vertical tube with uniform wall heat flux (A) ... 377

WENDER, L.
Heat transfer between fluidized solids beds and boundary surfaces—correlation of data (A) ... 1070

WESCOTT, BLAINE B.
How is the research dollar spent? ... 747

WESSON, CHARLES MACON
Obituary ... 328

WESTCOTT, J. H.
Design of multivariable optimum filters (A) ... 585

WESTON, E. H.
Notes on catalytic-cracked fuels ... 651

WESTWATER, J. W.
Film boiling from vertical tubes (A) ... 1070

WETHERILL, FREDERIC V.
Obituary ... 916

WETTING. *See* HEAT TRANSFER

WEXLER, A.
Control of research and development to meet company objectives (A) ... 584

WHEATER, R. I.
Effort to use a laboratory test as an index of combustion performance (A). 53

WHEATON, WILLIAM E.
Obituary ... 628

WHEELER, LOUIS JAMES
Obituary ... 1108

WHIPPLE, G. HOYT
Radiation-hazard control for a power reactor ... 253

WHITE, A. O.
Design features of new 16,500-kw gas turbines for power generation (A) ... 581

WHITE, ALBERT EASTON
Obituary ... 424

WHITE, JAMES ALFRED
Obituary ... 716

WHITEFORD, ALEXANDER W.
Obituary ... 532

WHITEMAN, I. R.
Heat transfer between a flat plate and a fluid containing heat sources (A) ... 880
Heat transfer to flow in a round tube with arbitrary velocity distribution (A) ... 965

WHITESIDES, W. F.
Approach to simplification of aerial refueling hose-reel units (A) ... 681

WHITLEY, FREDERIC NELSON
Obituary ... 1216

WICHUM, VICTOR
Obituary ... 1012

WICKENDEN, THOMAS H.
Awarded honorary DS degree at Denison University ... 815

WIEBE, W. H.
Design of warped buckets for optimum efficiency (A) ... 588

WIKANDER, OSCAR RAGNAR
Obituary ... 220

WIKSTROM, OLLE
Obituary ... 1108

WILD, JOHN M.
Arnold Engineering Development Center 8

WILDER, A. B.
Pipeline steels—a review of the industry. 448

WILDING, JOHN D.
Appointed Assistant Secretary of ASME 810

WILDMANN, M.
Experiments on gas-lubricated journal bearings (A) ... 51

WILEY, J. R.
Air-cargo-terminal design and location (A) ... 384

WILHOIT, J. C., JR.
Apparent frictional forces of clamping elements as used in the oil industry (A) ... 385

WILHOIT, L. M.
Surface-controlled subsurface safety device for offshore locations (A) ... 1066

WILKINSON, THOMAS LEE
Obituary ... 128

WILLA, J. L.
Instrumenting a field study of industrial water-cooling tower performance (A) .. 288

WILLCOX, GEORGE BINGHAM
Obituary ... 1012

WILLIAMS, A. J., JR.
Some dynamics of the golf shot (A) ... 587

WILLIAMS, CLYDE
Fuels for the future ... 552

WILLIAMS, F. S. G.
Appointed chairman of the Special Committee on Nuclear Power ... 321

WILLIAMS, M. L.
On the stress distribution at the base of a stationary crack (A) ... 284

WILLIAMS, WILLIAM HORACE
Obituary ... 1216

WILLIS, D. G.
Elastic coefficients of the theory of consolidation (A) ... 776

WILLISTON, ARTHUR LYMAN
Obituary ... 220

WILLKE, H. L.
Hydraulic torque converters ... 738

WILSON, G. F.
Ceramic and carbide tool performance tests—Part I (A) ... 184

WILSON, L. A.
Mechanical approach to simplified jet-engine maintenance (A) ... 680

WILSON, LYNDON FRANCIS
Obituary ... 1216

WILSON, R. A.
Belt feeders ... 1042

WILSON, R. B.
Designing equipment for reliability ... 1142

WIND POWER
Generation of electricity by wind power (BR) ... 392

WINDSHIELDS
Supersonic safety glass for airplane windshields (A) ... 175

WISEMAN, C. D.
Effect of stress on creep at high temperatures (A) ... 285
WITHEROW, RALPH
Are engineers underpaid?—some conclusions ... 168
WITTEL, OTTO
Nonintermittent film projector ... 345
WOLCOTT, J. R.
Dresden boiling-water reactor (cond.) ... 238
WOLFE, HARRY HAMILTON
Obituary ... 828
WOLFSON, M. K.
Experience with water-alcohol injection on the J47 engine (A) ... 384
WOMEN ENGINEERS
Can women crash the gate? ... 598
WOOD, P. I.
Guided missiles call for airborne auxiliary power systems for purposes other than propulsion ... 733
WOOD CONSTRUCTION
Design of timber roof truss with nail-glued connections (A) ... 379
Fire safety of engineered timber construction ... 350, (D) 1075
Recent developments in engineered timber construction (A) ... 379
WOOD INDUSTRIES. *See also* PLYWOOD
Case for the hollow core (A) ... 679
Paper honeycomb used for core materials at the Brunswick Balke Collender Company (A) ... 679
Selection of carbide-tipped saw blades for optimum performance (A) ... 678
WOODCOCK, ALAN H.
Analysis of energy exchange between man and his environment ... 1029
WOODMAN, WALTER C.
Yankee pressurized-water reactor (cond.) 236
WOODWORKING MACHINERY
Automatic machining in furniture manufacture (A) ... 678
Automatic sanding ... 546
Finishing controls at Drexel Furniture Company (A) ... 679
Mechanical unit for taper sawing (A) ... 882
Remote-control systems for setting sawmill carriages (A) ... 883
Woodworking accuracy ... 542
WOOLARD, H. W.
Theoretical analysis of the viscous flow in a narrowly spaced radial diffuser (A) ... 381
WOOTON, W. R.
Nuclear power in Britain (A) ... 770
WORLD POWER CONFERENCE
Eleventh sectional meeting, Belgrade, 1957 ... 397
WORRELL, G. R.
Selection of materials for construction of catalytic reforming units (A) ... 47
WRAITH, WILLIAM
Obituary ... 220
WREN, J. B.
Modern textile motors (A) ... 1169
WUSKA, ANDREW T.
Report from Dixie on the professional development of the young engineer ... 620

X

X RAYS. *See* GAGES.
XANTEN, W. A.
Design criteria for municipal incinerators (D) ... 389
XEROGRAPHY. *See* PHOTOGRAPHY

Y

YEH, H.
Boundary layer along annular walls in a swirling flow (A) ... 968
YELLOTT, J. I.
Some aspects of solar-energy economics (A) ... 773
YINDRA, JOSEPH
New single-shaft 3000-hp gas turbine ideal for mechanical drive application (A) ... 581
YOKOBORI, T.
Theoretical criterion for the fracture of metals under combined alternating stresses (A) ... 486
YOUNG, E. C.
Automatic production of oil from wellhead to pipeline (A) ... 1062
YOUNG, H. D.
Engineering and construction of the engineering test reactor—Part II (A) ... 769
YOUNG, R. L.
Design considerations in the development of a cyclone-fired boiler installation (A) ... 1162
YOUNGBLUTT, S. P.
Tools, ideas, and people perform aircraft engine overhaul and maintenance (cond.) ... 1123
YUAN, S. W.
Radial deflections of a cylinder subjected to equal and opposite concentrated radial loads (A) ... 284

Z

ZEISER, R. W.
Design and testing of containment provisions for the engineering test reactor (A) ... 973
ZELLNIK, H. E.
Convective heat transfer from high-temperature air inside a tube (A) ... 1070
ZERBE, J. E.
Investigation of burnout heat flux in rectangular channels at 2000 psia (A) ... 881
Pressure drop for parallel flow through rod bundles (A) ... 483
ZIELKE, C. W.
Multifuel firing of cyclone furnaces (D) ... 193
ZINKHAM, R. E.
Stress effects of rotary straightening on collapse resistance of high-strength casing (A) ... 1060
ZIRCONIUM
Back extrusion of heavy-walled Zircaloy-2 cups (A) ... 590, 936
ZONE REFINING. *See* SILICON
ZSCHALER, W. A.
Control-rod and drive mechanism for the engineering test reactor (A) ... 769
ZUBER, NOVAK
On the stability of boiling heat transfer (A) ... 962
ZUMBRUNNEN, R. J.
Selecting water-treating processes for medium-pressure boilers (A) ... 481
ZUPNIK, T.
Effectiveness of stub fins as determined by the Teledeltos paper analog (A) ... 960
ZWICKY, E. E., JR.
Use of digital computers in the mechanical design of large steam turbines (A) ... 288

Index to ASME Transactions

Volume 79, 1957

The ASME Transactions for 1957 was issued in January, February, April, May, July, August, October, and November, 1957.

The Society Records for the year 1956 appeared as supplements, in January and February, 1957, and the index section in January, 1957. The page numbers for these supplements are designated by the symbol SR, and the supplement contains its own index.

(D) denotes discussion of a paper.

Issue	Page Numbers
January	1– 190
February	191– 438
April	439– 694
May	695– 948
July	949–1204
August	1205–1458
October	1459–1714
November	1715–1970

A

ABLOW, C. M.
Transient air temperatures in a duct.... 1536

ACCELEROMETERS. *See* INSTRUMENTS

ACOSTA, A. J.
Effect of the volute on performance of a centrifugal-pump impeller..... 1057
Experimental study of centrifugal-pump impellers..... 1821

ACOUSTICS
Noise, vibration, and measurement problems, resulting from fluid-flow disturbances..... 1043

ADHESION (RAIL)
Investigation of causes of low wheel-to-rail adhesion and possible methods of improving it..... 377

AERODYNAMICS
Problems encountered in the translation of compressor performance from one gas to another..... 887

AIR HEATERS
Operating experience and design features of closed-cycle gas-turbine power plants..... 627

AIRPLANE ENGINES
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals..... 481

AIRPLANE FUEL SYSTEMS
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals..... 481

AIRPLANE HYDRAULIC SYSTEMS
Comparison of hydraulic and pneumatic accessory power generation..... 1284

AIRPLANE REFUELING. *See* FLUID METERS

AIRPLANE WINGS
Weight-efficiency analysis of thin-wing construction..... 974

AIRPLANES. *See also* COOLING SYSTEMS
Aircraft structural testing techniques at elevated temperatures..... 1005
Application of a new structural index to compare titanium alloys with other materials in airframe structures..... 949
Description and prediction of human response to aircraft thermal environments..... 1024
Design criteria for heated aircraft structures..... 980
Discussion on safety-factor requirements for supersonic aircraft structures..... 986
Optimum stresses of structural elements at elevated temperatures..... 959
Some NACA research on effect of transient heating on aircraft structures..... 1014
Some structural penalties associated with thermal flight..... 990
Thermostructural efficiencies of compression elements and materials..... 967

ALLEN, J. L.
Avon No. 8—a supercritical-pressure plant (D)..... 936

ALLEN, R. K.
Investigation of causes of low wheel-to-rail adhesion and possible methods of improving it..... 377

ALLOYS. *See also* ALUMINUM AND ALUMINUM ALLOYS, METALLURGY

ALUMINUM AND ALUMINUM ALLOYS
Application of a new structural index to compare titanium alloy with other materials in airframe structures..... 949
Forces and power required to turn aluminum and seven alloys..... 909
Residual stresses in cold extruded aluminum..... 155

AMBLER, G. C.
Testing dynamically loaded bearings—*II* a diesel-engine bearing test machine (D)..... 1265

AMSTEAD, B. H.
Temperature and velocity distribution and transfer of heat in a liquid metal.. 279

ANALOGY. *See* ELECTRIC ANALOGY

ANALYSIS. *See* AUTOMATIC CONTROL, DIMENSIONAL ANALYSIS, NONLINEAR SYSTEMS, SPECTROGRAPHIC ANALYSIS

ANDERSON, J. B.
Fuel elements for nuclear reactors..... 29

ANDERSON, R. A.
Weight-efficiency analysis of thin-wing construction..... 974

ANGER, E. M.
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler (D)..... 327

APPEL, D. W.
Cavitation characteristics of gate valve and globe valves used as flow regulators under heads up to about 125 feet (D)..... 1281

APPLIED MECHANICS
Fork-truck stability—a study in moments..... 1591

ARONSON, DAVID
Generalized optimal heat-exchanger design (D)..... 658
Pressure drop for parallel flow through rod bundles (D)..... 1756

AUSMAN, J. S.
Fluid dynamic theory of gas-lubricated bearings..... 1218

AUTOMATIC CONTROL. *See also* PNEUMATIC DEVICES, SERVOMECHANISMS
Application of an analog computer to the measurement of process dynamics.... 823
Basic methods for nonlinear control-system analysis..... 497
Determination of the characteristics of multi-input and nonlinear systems from normal operating records..... 567
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals..... 481
Graphical method for the analysis of piecewise linear control systems, with particular application to relay controls..... 841
How to obtain describing functions for nonlinear feedback systems..... 509
Information center with automatic logger and scanner—Neches Power Station, Gulf States Utilities Company..... 1652
New automatic dispatching system at Kansas City..... 1663
Optimum nonlinear control..... 527
Phase-space method for analysis of nonlinear control systems..... 1897
Physical and mathematical mechanisms of instability in nonlinear automatic control systems..... 553
Response of temperature-sensing-element analogs..... 1857

AUTOMATIC CONTROL (*continued*)
Résumé of the development and literature of nonlinear control-system theory..... 445
Signal stabilization of a control system.. 1869
Use of nonlinear valve characteristics in the control of a simple blending process..... 329

B

BACKER, W. R.
Influence of grinding fluids upon residual stresses in hardened steel (D)..... 152

BAILEY, W. H.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D)..... 1393

BAIRD, R. B.
Aircraft structural testing techniques at elevated temperatures..... 1005

BAKER, MERL
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems (D).. 679

BALJE, O. E.
Drag-turbine performance..... 1291

BALL, J. W.
Cavitation characteristics of gate valve and globe valves used as flow regulators under heads up to about 125 feet..... 1275

BALMFORD, J. A.
Analysis of a process-fluid-flow network by electrical analogy..... 1957

BANKOFF, S. G.
Ebullition from solid surfaces in the absence of a pre-existing gaseous phase..... 735

BANWELL, C. J.
Flow sampling and discharge measurement in geothermal bores..... 269
New Zealand thermal area and its development for power production..... 255

BARGER, J. P.
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range..... 681

BARNES, A. H.
Methods of refueling heterogeneous nuclear reactors..... 47

BARTAS, J. G.
Estimation of temperature patterns in multiply-shielded systems..... 1722

BARTLETT, R. L.
Predicting performance of large steam turbine-generator units for central stations..... 1085

BARWELL, F. T.
Testing dynamically loaded bearings—I a short history of bearing test machines (D)..... 1256

BASS, R. W.
Basic methods for nonlinear control-system analysis (D)..... 507
Graphical method for the analysis of piecewise linear control systems, with particular application to relay controls (D)..... 850
How to obtain describing functions for nonlinear feedback systems (D)..... 512
Physical and mathematical mechanisms of instability in nonlinear automatic control systems (D)..... 563

BEADLE, R. H.
Combustion system for spark-fired gas engines using diesel compression ratios..... 815

BEAMS
Curved beams with eccentric boundaries. 1317

BEARDSLEY, E. G.
Combustion system for spark-fired gas engines using diesel compression ratios (D)..... 819

BEARINGS
Analysis of journal bearings with arbitrary load vector ... 1213
Application of digital computers to bearing design ... 1483
Design study of a hydrostatic gas bearing with inherent orifice compensation ... 11
Fluid dynamic theory of gas-lubricated bearings ... 1218
Heat-transfer effects in hydrostatic thrust-bearing lubrication ... 1225
Maximum temperature profile in journal bearings ... 337
On the theory of grease-lubricated thrust bearings ... 1229
Predominant-peak surface roughness, a criterion for minimum hydrodynamic oil-film thickness of short journal bearings ... 1235
Properties of misaligned journal bearings ... 1205
Spring-supported thrust bearing ... 351
Temperature distribution in the journal-bearing lubricant film ... 343
Testing dynamically loaded bearings I, a short history of bearing test machines. II, a diesel-engine bearing test machine ... 1260 1267
Universal bearing tester ... 1267

BECK, CYRUS
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings (D) ... 1764

BELL, K. J.
Flow through annular orifices ... 593

BELLMAN, RICHARD
Résumé of the development and literature of nonlinear control-system theory (D) ... 449

BELSHEIM, R. O.
Delayed-yield time effects in mild steel under oscillatory axial loads ... 1619

BENNETT, J. D.
Power from solar energy (D) ... 1358

BENTON, T. C.
Temperature distribution in the journal-bearing lubricant film ... 343

BERGELIN, O. P.
Flow sampling and discharge measurement in geothermal bores (D) ... 278
Flow through annular orifices ... 593
New Zealand thermal area and its development for power production (D) ... 268

BIERNSON, G. A.
Dual-mode damper-stabilized servo (D) ... 479

BIGLIANO, R. P.
On the dynamics of pneumatic transmission lines (D) ... 868
Use of nonlinear valve characteristics in the control of a simple blending process (D) ... 336

BINDER, R. C.
Practical application of uncertainty calculations to measured data ... 373

BIRMANN, RUDOLPH
Design and development of a two-cycle turbocharged diesel engine (D) ... 1938

BISHOP, P. H.
Noise, vibration, and measurement problems, resulting from fluid-flow disturbances ... 1043

BLACK, K. G.
Résumé of the development and literature of nonlinear control-system theory (D) ... 449

BLADES, R. T.
Prevention of destructive engine failure by spectrographic analysis of crankcase oils ... 709

BLADES. *See* TURBOMACHINERY

BLAKE, F. A.
Combustion system for spark-fired gas engines using diesel compression ratios ... 815

BLASCHKE, T. C.
Design basis for cascade-type positional servomechanisms ... 1873

BLENDING. *See* MIXING

BLIZARD, E. P.
Reactor shielding ... 35

BLUMBERG, H. S.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service ... 1377

BOGAR, W. H.
Fork-truck stability—a study in moments ... 1591

BOGARDUS, F. J.
Curved beams with eccentric boundaries ... 1317

BOILERS
Engineering the Eddystone steam generator for 5000-psig, 1200-F steam ... 1447
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler ... 319

BOILING
Ebullition from solid surfaces in the absence of a pre-existing gaseous phase ... 735
Theoretical analysis of heat transfer in natural convection and in boiling ... 1501

BOOTHE, W. A.
Pressure-flow characteristics of pneumatic valves (D) ... 1586

BOSTON, O. W.
Forces and power required to turn aluminum and seven alloys ... 909

BOTTOMLEY, W. T.
Fluid flow through two orifices in series, III—The parameters of metastable and stable flow of hot water (D) ... 189

BOULGER, F. W.
Force relationships in the machining of low-carbon steels of different sulphur contents ... 1155
Influence of lead on metal-cutting forces and temperatures (D) ... 1153
Leaded steel and the real area of contact in metal cutting (D) ... 1171

BOUNDARY LAYER. *See* FLOW OF FLUIDS, HEAT TRANSFER

BOWERMAN, R. D.
Effect of the volute on performance of a centrifugal-pump impeller ... 1057
Experimental study of centrifugal-pump impellers ... 1821

BRAINARD, P. L.
Fork-truck stability—a study in moments (D) ... 1596

BRAKES
Graphical shoe-brake analysis ... 1322

BREDTHAUER, R. O.
Strength characteristics of rock samples under hydrostatic pressure ... 695

BROUNS, R. C.
Aircraft structural testing techniques at elevated temperatures ... 1005

BROWN, E. I.
Comparison of hydraulic and pneumatic accessory power generation ... 1284

BROWN, H. E.
Temperature and velocity distribution and transfer of heat in a liquid metal ... 279

BROWN, W. F., JR.
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties ... 117
On the applicability of notch tensile test data to strength criteria in engineering design (D) ... 115

BRUCKNER, R. E.
Mollier diagrams for water near bubble point (D) ... 1195

BRULL, M. A.
Optimum stresses of structural elements at elevated temperatures ... 959

BRYDEN, H. L.
Comparative machinability of B1113—C1213—C1120 HR—C1120 CD and C1119 steels ... 915

BUBBLE POINT. *See* WATER

BUCKLEY, P. S.
On the dynamics of pneumatic transmission lines (D) ... 868

BURNERS
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation ... 1727

C

CAMERON, D. H.
New automatic dispatching system at Kansas City ... 1663

CAMERON, J. A.
Cooling towers for steam-electric stations—selection and performance experiences (D) ... 1695

CAMPBELL, C. B.
Eddystone superpressure unit ... 1431

CARLISS, O. S.
Fork-truck stability—a study in moments (D) ... 1597

CARMI, ARIEH
Natural-convection heat transfer from a horizontal cylinder rotating in air ... 741

CARPENTER, O. R.
Eight years of experience with austenitic steel piping materials at elevated steam conditions (D) ... 1376

CARTER, WM. J.
Application of complex geometry to relative velocities and accelerations in mechanisms (D) ... 692
Kinematic analysis and synthesis using collineation-axis equations ... 1305

CASCADES. *See* COMPRESSORS, FLOW OF FLUIDS, SERVOMECHANISMS

CASE, S. L.
Comparative machinability of B1113—C1213—C1120 HR—C1120 CD and C1119 steels (D) ... 918

CASEY, D. F.
Heat transfer to lead-bismuth in turbulent flow in an annulus ... 1514

CAST IRON
Flow and fracture of nodular cast iron ... 1911

CATHERON, A. R.
Design basis for cascade-type positional servomechanisms (D) ... 1896
On the dynamics of pneumatic transmission lines (D) ... 868

CAVITATION
Cavitation characteristics of gate valves and globe valves used as flow regulators under heads up to about 125 feet ... 1275

CEELY, F. J.
An effort to use a laboratory test as an index of combustion performance ... 1177

CESS, R. D.
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I (D) ... 905

CHAMBERLAIN, H. H.
New automatic dispatching system at Kansas City (D) ... 1668

CHANG, YAN PO
Theoretical analysis of heat transfer in natural convection and in boiling ... 1501

CHATTERTON, ERNEST
Future developments of the high-speed diesel engine ... 1941

CHENG, SIN-I
Unsteady laminar boundary layer on a flat plate ... 725

CHESTERS, J. H.
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation (D) ... 1738

CHIN, T. H.
Résumé of the development and literature of nonlinear control-system theory (D) ... 449

CHURCH, A. H.
Vibration design charts (D) ... 1475

CIESLICKI, M. E.
Spring back of metals (D) ...

CLABAUGH, W. J.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic ... 1079

CLAMPS. *See* PETROLEUM-WELL EQUIPMENT

CLARE, H.
Effect of ambient and fuel pressure on nozzle spray angle (D) ... 614

CLARK, C. L.
Experimental super heater for steam at 2000 psi and 1250F—Report after 14,281 hours of operation (D) ... 315

CLARK, R. N.
Compensation of steady-state flow forces in spool-type hydraulic valves ... 1784
Résumé of the development and literature of nonlinear control-system theory (D) ... 450

CLAYTON, M. M.
Cavitation characteristics of gate valve and glove valves used as flow regulators under heads up to about 125 feet (D) ... 1282

CLOUDS. *See* SPRAYS

CLOUGH, W. R.
Flow and fracture of nodular cast iron ... 1911

COFFIN, L. F., JR.
Flow and fracture of nodular cast iron (D) ... 1919
Investigation of thermal-stress fatigue as related to high-temperature piping flexibility ... 1637

COLD WORKING. *See* METAL ROLLING

COLE, J. A.
Temperature distribution in the journal-bearing lubricant film (D) ... 348

COLE, W. H.
Experimental investigation of critical design factors for vane-type cyclones ... 1715

COMBUSTION
Applications of an enthalpy-fuel/air

COMBUSTION (*continued*)
ratio diagram to "first law" combustion problems ... 1129
Combustion system for spark-fired gas engines using diesel compression ratios ... 815
An effort to use a laboratory test as an index of combustion performance ... 1177
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation ... 1727
On the changing size spectrum of particle clouds undergoing evaporation, combustion, or acceleration ... 775

COMBUSTORS. *See* GAS TURBINES

COMPRESSED AIR. *See* PNEUMATIC DEVICES

COMPRESSORS
Operating considerations in application of gas-turbine-driven, centrifugal, pipeline compressors ... 721
Problems encountered in the translation of compressor performance from one gas to another ... 887
Skewed boundary-layer flow near the end walls of a compressor cascade ... 1789

COMPUTERS. *See also* ELECTRIC ANALOGY
Application of digital computers to bearing design ... 1483
Dynamic performance computer for gas-turbine engines ... 1707
Investigations of the properties of corrugated diaphragms ... 65
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems ... 675
Two applications of a digital computer to machine-design problems ... 1476

CONDUCTION. *See* HEAT TRANSFER

CONTROL. *See* AUTOMATIC CONTROL, SERVOMECHANISMS

CONVECTION. *See* HEAT TRANSFER

COOK, N. H.
Influence of lead on metal-cutting forces and temperatures ... 1143

COOK, R. D.
Method for presenting the response of temperature-measuring systems (D) ... 1855
Response of temperature-sensing-element analogs (D) ... 1865

COOLING SYSTEMS
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range ... 681
Mass-transfer cooling in a laminar boundary layer with constant fluid properties ... 247
Research on application of cooling to gas turbines ... 645

COOLING TOWERS
Cooling towers for steam-electric stations—selection and performance experiences ... 1685
Instrumenting a field study of industrial water-cooling tower performance ... 1679

COOLING TOWER INSTITUTE. TECHNICAL SUB-COMMITTEE NO. 2
Instrumenting a field study of industrial watercooling tower performance ... 1679

COON, G. A.
Response of temperature-sensing-element analogs ... 1857

COREY, R. C.
An effort to use a laboratory test as an index of combustion performance (D) ... 1182

CORROSION
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler ... 319

CORTEN, H. T.
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A ... 89
Effects of complex stress-time cycles on the fatigue properties of metals (D) ... 1336

COST ANALYSIS
Maintenance factors affecting production costs ... 173

COULTER, S. B.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines ... 1669

COWLEY, P. E. A.
Application of an analog computer to the measurement of process dynamics ... 823

CRAIN, R. W., SR.
Transient air temperatures in a duct (D) ... 1541

CRAMER, K. R.
Heat transfer to laminar boundary layers with variable free-stream velocity (D) ... 1549

CRANDALL, S. H.
Spring back of metals (D) ... 7

CRANE, E. V.
Residual stresses in cold extruded aluminum (D) ... 159

CRANKCASE OILS. *See* LUBRICANTS

CREVELING, J. H.
Some studies of angle relationships in metal cutting ... 127

CROOKS, W. R.
Combustion system for spark-fired gas engines using diesel compression ratios (D) ... 820

CUMMINGS, H. N.
Fatigue of metals under combinations of stresses (D) ... 1347

CUNNINGHAM, R. G.
Jet-pump theory and performance with fluids of high viscosity ... 1807

CURRAN, R. M.
Austenitic steels in high-temperature steam piping ... 1398

CUTTING FLUIDS. *See* GRINDING, METAL CUTTING

CYCLONES. *See* DUST COLLECTORS

D

DANIELS, FARRINGTON
Power from solar energy (D) ... 1358

DANZIGER, W. J.
Pressure drop for parallel flow through rod bundles (D) ... 1756

DASKIN, WALTER
Generalized optimal heat-exchanger design (D) ... 660

DAUBER, C. A.
Avon No. 8—a supercritical-pressure plant ... 927

DE CORSO, S. M.
Effect of ambient and fuel pressure on nozzle spray angle ... 607

DEFORMATION. *See also* METAL CREEP

DE GRAAF, J. E.
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation (D) ... 1739

DEMING, N. R.
Instrumentation for steam-consumption tests on medium steam turbine-generator sets (D) ... 363

DESCRIBING FUNCTIONS. *See* NONLINEAR SYSTEMS

DIAPHRAGMS
Design of corrugated diaphragms ... 55
Investigations of the properties of corrugated diaphragms ... 65
Recent research on flat diaphragms and circular plates with particular reference to instrument applications ... 83

DIBOLL, W. B. JR.
Apparent frictional forces on clamping elements as used in the oil industry (D) ... 1635
Vibration design charts (D) ... 1475

DIESEL ENGINES
Design and development of a two-cycle turbocharged diesel engine ... 1929
Future developments of the high-speed diesel engine ... 1941
Testing dynamically loaded bearings—II a diesel-engine bearing test machine ... 1260

DIMENSIONAL ANALYSIS
Investigations of the properties of corrugated diaphragms ... 65

DISPATCHING. *See* AUTOMATIC CONTROL, POWER SYSTEMS

DITTRICH, R. T.
Pressure drop and air-flow distribution in gas-turbine combustors ... 1601

DOLAN, T. J.
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A ... 89

DOLL, H. G.
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism ... 513

DONWORTH, R. B.
Engineering the Eddystone steam generator for 5000-psig, 1200-F steam (D) ... 1457

DOUGLAS, T. B.
Specific heats of liquid metals and liquid salts ... 23

DRAG TURBINES. *See* TURBINES

DRESSLER, R. F.
Design of corrugated diaphragms (D) ... 61
Investigations of the properties of corrugated diaphragms ... 65

DREYER, WALTER
Integration of steam and hydro power in Northern California ... 433

DRILLING. *See* METAL CUTTING

DRILLS
Some experiments on the influence of various factors on drill performance ... 191

DROPKIN, DAVID
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I ... 899
Natural-convection heat transfer from a horizontal cylinder rotating in air ... 741

DUBERG, J. E.
Some NACA research on effect of transient heating on aircraft structures ... 1014

DUBOIS, G. B.
Properties of misaligned journal bearings ... 1205

DUCTS. *See* FLOW OF FLUIDS, HEAT TRANSFER

DURDEN, J. C.
Curved beams with eccentric boundaries ... 1317

DUSINBERRE, G. M.
Mean-temperature difference in one, two, and three-pass crossflow heat exchangers (D) ... 296
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems (D) ... 680
New finite-difference technique for solution of the heat-conduction equation, especially near surfaces with convective heat transfer (D) ... 1525
Transient air temperatures in a duct (D). 1541

DUST COLLECTORS
Experimental investigation of critical design factors for vane-type cyclones ... 1715

DUWEZ, POL
Utilization of solar furnaces in high-temperature research ... 1019

DWYER, O. E.
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I ... 899
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (D) ... 1083

E

EBERLE, F.
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation ... 307
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) ... 1391

ECKERT, E. R. G.
Experimental study of the velocity and temperature distribution in a high-velocity vortex-type flow ... 751
Mass-transfer cooling in a laminar boundary layer with constant fluid properties ... 247
Theoretical analysis of heat transfer in natural convection and in boiling (D) ... 1509

ECKMAN, D. P.
Electrohydraulic servomechanism with an ultrahigh-frequency response ... 455

ECONOMICS. *See* EQUIPMENT REPLACEMENT

EDSE, R.
Design of supersonic expansion nozzles and calculation of isentropic exponent for chemically reacting gases ... 1527

EDWARDS, R. A.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (D) ... 1083

EGGLESTON, G. E.
Mean-temperature difference in one, two, and three-pass crossflow heat exchangers (D) ... 296

EICHBERGER, L. C.
Nonhomogeneous yielding of steel cylinders. 1—Mild steel ... 1608

EICHENBERGER, H. P.
Pressure drop for parallel flow through rod bundles (D) ... 1757

EISENSTADT, RAYMOND
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers ... 1070

ELASTICITY
Spring back of metals ... 1

ELBOWS. *See* PIPE BENDS

ELECTRIC ANALOGY
Analysis of a process-fluid-flow network by electrical analogy ... 1957
Application of an analog computer to the measurement of process dynamics ... 823
Computer representations of engineering systems involving fluid transients ... 1840
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism ... 513
Design basis for cascade-type positional servomechanisms ... 1873
Dynamic performance computer for gas-turbine engines ... 1707
Electrohydraulic servomechanism with an ultrahigh-frequency response ... 455
Nonlinear analog study of a high-pressure pneumatic servomechanism ... 465
On the dynamics of pneumatic transmission lines ... 853
Representation of nonlinear functions of two input variables on analog equipment ... 489
Responses of temperature-sensing-element analogs ... 1857
Solving the melting problem using the electric analogy to heat conduction ... 759

ELECTRICITY. *See* FRICTION

ELLIOTT, D. A.
Representation of nonlinear functions of two input variables on analog equipment ... 489

ELLIOTT, DAVID
Unsteady laminar boundary layer on a flat plate ... 725

ELROD, H. G., JR.
New finite-difference technique for solution of the heat-conduction equation, especially near surfaces with convective heat transfer ... 1519

ELSESSER, T. M.
Influence of repeated bending loads on biaxial residual stresses in shot-peened plates ... 1904

ELSTON, C. W.
First commercial supercritical-pressure steam turbine—built for the Philo Plant ... 417

ENGINES. *See also* AIRPLANE ENGINES, WEAR

ENGINES—GAS
Combustion system for spark-fired gas engines using diesel compression ratios ... 815

EQUIPMENT REPLACEMENT
Practical equipment-replacement economics ... 799

ERICKSON, A. J.
On the changing size spectrum of particle clouds undergoing evaporation, combustion, or acceleration ... 775

ESGAR, J. B.
Research on application of cooling to gas turbines ... 645

ESTCOURT, V. F.
Plant management and other factors affecting maintenance costs in steam-generating stations ... 161

EVANS, C. T., JR.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) ... 1393

EVAPORATION
On the changing size spectrum of particle clouds undergoing evaporation, combustion, or acceleration ... 775

EVERETTS, JOHN, JR.
Analysis of a process-fluid-flow network by electrical analogy (D) ... 1962

EXTRUSION. *See* METAL EXTRUSION

EYKMAN, E. G. J.
Response of temperature-sensing-element analogs (D) ... 1865

EZEKIEL, F. D.
Computer representations of engineering systems involving fluid transients ... 1840
On the dynamics of pneumatic transmission lines (D) ... 869
Pressure-flow characteristics of pneumatic valves ... 1577

F

FADDEN, W. J., JR.
New way to simplify the steam power plant ... 1115

FAIRCHILD, F. P.
Eight years of experience with austenitic steel piping materials at elevated steam conditions ... 1371

FARBER, E. A.
Power from solar energy (D) ... 1358

FATIGUE OF MATERIALS. *See also* METAL FATIGUE

FAX, D. H.
Generalized optimal heat-exchanger design ... 653

FAZEKAS, G. A. G.
Graphical shoe-brake analysis ... 1322

FEDER, M. S.
Contributions to hydraulic control—7, analysis of the effects of nonlinearity in a valve-controlled hydraulic drive (D) ... 432

FEEDBACK. *See* AUTOMATIC CONTROL

FEEDWATER TREATMENT
Effect of condensate reheat on mean temperature difference in feedwater heater subcooling zones ... 1494
Engineering the Eddystone plant for 5000-lb 1200-deg steam ... 1410

FELGAR, R. P.
Vibration design charts ... 1459

FERNANDEZ, J.
Mean-temperature difference in one, two, and three-pass crossflow heat exchangers ... 287

FETT, G. H.
Résumé of the development and literature of nonlinear control-system theory (D) ... 450

FIALA, S. N.
First commercial supercritical-pressure steam-electric generating unit for Philo Plant ... 389

FIEDLER, G. J.
Criteria for validity of lumped-parameter representation of ducting airflow characteristics ... 833

FINDLEY, W. N.
Fatigue of metals under combinations of stresses ... 1337

FINITE-DIFFERENCE METHODS. *See* MATHEMATICS

FINNIE, I.
Some studies of angle relationships in metal cutting (D) ... 137

FIREY, J. C.
Transient air temperatures in a duct (D) ... 1541

FISHER, F. G.
Investigation of causes of low wheel-to-rail adhesion and possible methods of improving it ... 377

FITZGERALD, R. C.
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation (D) ... 316

FLAMES. *See* HEAT TRANSFER

FLEISCHMANN, W. L.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) ... 1393

FLOW OF FLUIDS. *See also* CAVITATION, COOLING SYSTEMS, FLUID METERS, HEAT TRANSFER, HYDRODYNAMICS
Analysis of a process-fluid-flow network by electrical analogy ... 1957
Criteria for validity of lumped-parameter representation of ducting airflow characteristics ... 833
Design study of a hydrostatic gas bearing with inherent orifice compensation ... 11
Effect of axial fluid conduction on heat transfer in the entrance regions of parallel plates and tubes ... 765
Effect of the volute on performance of a centrifugal-pump impeller ... 1057
Experimental arrangement for the measurement of the pressure distribution on high-speed rotating blade rows ... 617
Experimental study of the velocity and temperature distribution in a high-velocity vortex-type flow ... 751
Flow through annular orifices ... 593
Heat transfer in a pipe with turbulent flow and arbitrary wall-temperature distribution ... 789

FLOW OF FLUIDS (*continued*)
Heat transfer to laminar boundary layers with variable free-stream velocity ... 1545
Investigation of the end-wall boundary layer of a turbine-nozzle cascade ... 1801
Losses in pipe and fittings ... 1767
Noise, vibration, and measurement problems, resulting from fluid-flow disturbances ... 1043
On the adiabatic Couette flow of a compressible fluid ... 1313
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic ... 1079
Pressure drop and air-flow distribution in gas-turbine combustors ... 1601
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers ... 1070
Pressure drop for parallel flow through rod bundles ... 1751
Pressure-flow characteristics of pneumatic valves ... 1577
Problems encountered in the translation of compressor performance from one gas to another ... 887
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings ... 1759
Skewed boundary-layer flow near the end walls of a compressor cascade ... 1789
Unsteady laminar boundary layer on a flat plate ... 725

FLOWMETERS. *See* FLUID METERS

FLUID FRICTION
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes ... 1558
Losses in pipe and fittings ... 1767
Pressure drop for parallel flow through rod bundles ... 1751

FLUID METERS
Flow sampling and discharge measurement in geothermal bores ... 269
Fluid flow through two orifices in series, III—the parameters of metastable and stable flow of hot water ... 183
Mass flowmeter for in-flight refueling ... 1039
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic ... 1079

FOLSOM, R. G.
Jet-pump theory and performance with fluids of high viscosity (D) ... 1819

FORBES, G. F.
Résumé of the development and literature of nonlinear control-system theory (D) ... 450

FORK TRUCKS. *See* INDUSTRIAL TRUCKS

FOWLER, C. M.
New finite-difference technique for solution of the heat-conduction equation, especially near surfaces with convective heat transfer (D) ... 1525

FRACTURE. *See* STRESSES AND STRAINS

FRANCK, C. C., SR.
Eddystone superpressure unit ... 1431

FRASER, J. P.
Turbulent free-convection, heat-transfer rates in a horizontal pipe ... 1185

FRENDBERG, A. M.
First commercial supercritical-pressure steam generator for Philo Plant ... 409

FREQUENCY RESPONSE. *See also* SERVOMECHANISMS
Application of an analog computer to the measurement of process dynamics ... 823

FREUDENSTEIN, FERDINAND
Application of complex geometry to relative velocities and accelerations in mechanisms (D) ... 692

FREUND, G. A.
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes (D) ... 1570

FRICTION. *See also* FLUID FRICTION
Apparent frictional forces on clamping elements as used in the oil industry ... 1627
Electrical effects accompanying the stick-slip phenomenon of sliding of metals on plastics and lubricated surfaces ... 1963

FRIED, L.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic ... 1079

FRIES, D. J.
Testing dynamically loaded bearings—I, a short history of bearing test machines (D) ... 1257

FRISCH, J.
Influence of repeated bending loads on biaxial residual stresses in shot-

FRISCH (*continued*)
peened plates (D) ... 1909
Residual stresses in cold extruded aluminum ... 155
FUELS. *See also* OIL FUEL
An effort to use a laboratory test as an index of combustion performance ... 1177
Heat transfer by radiation from flames—a summary of the work of the International FlameResearch Foundation ... 1727
FULTON, S. D.
Estimating partial-load performance of large reheat turbine-generator units ... 1360
FURBY, N. W.
Oronite high temperature hydraulic fluids 8200 and 8515 ... 1029
FURNACES. *See also* SOLAR ENERGY

G

GALLOWAY, D. F.
Some experiments on the influence of various factors on drill performance ... 191
GARDINER, F. J.
Spring back of metals ... 1
GARDNER, KARL A.
Effect of condensate reheat on mean temperature difference in feedwater heater subcooling zones ... 1494
GARVEY, T. M.
Force relationships in the machining of low-carbon steels of different sulphur contents ... 1155
GAS DYNAMICS. *See* BEARINGS
GAS LUBRICATION. *See* LUBRICATION
GAS TURBINES. *See also* POWER PLANTS—GAS-TURBINE
Dynamic performance computer for gas-turbine engines ... 1707
Operating considerations in application of gas-turbine-driven, centrifugal, pipeline compressors ... 721
Pressure drop and air-flow distribution in gas-turbine combustors ... 1601
Research on application of cooling to gas turbines ... 645
Seal leakage in the rotary regenerator and its effect on rotary-regenerator design for gas turbines ... 233
GASES
Applications of an enthalpy-fuel/air ratio diagram to "first law" combustion problems ... 1129
Design of supersonic expansion nozzles and calculation of isentropic exponent for chemically reacting gases ... 1527
GATCOMBE, E. K.
Application of digital computers to bearing design (D) ... 1492
GAYNOR, J.
Electrical effects accompanying the stick-slip phenomenon of sliding of metals on plastics and lubricated surfaces ... 1963
GEOMETRY. *See* KINEMATICS
GEORGE, H. H.
Effect of internal pressure on flexibility and stress-intensification factors of curved pipe or welding elbows ... 939
GEOTHERMAL BORES. *See* STEAM
GERARD, GEORGE
Thermostructural efficiencies of compression elements and materials ... 967
GILBERT, W. W.
Forces and power required to turn aluminum and seven alloys ... 909
GOERTZ, R. C.
Methods of refueling heterogeneous nuclear reactors ... 47
GOGLIA, M. J.
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems (D) ... 680
GOLDIN, ROBERT
Design criteria for heated aircraft structures ... 980
GOLDMAN, G. M.
Discussion on safety-factor requirements for supersonic aircraft structures ... 986
GOODMAN, T. P.
Determination of the characteristics of multi-input and nonlinear systems from normal operating records ... 567
GORDON, S. A.
Application of a new structural index to compare titanium alloys with other materials in airframe structures ... 949
GRAHAM, DUNSTAN
Physical and mathematical mechanisms of instability in nonlinear automatic control systems (D) ... 564
GRAHAM, J. D.
Résumé of the development and literature of nonlinear control-system theory (D) ... 450
GRAPHICAL METHODS
Design of corrugated diaphragms ... 55
Effect of internal pressure on flexibility and stress-intensification factors of curved pipe or welding elbows ... 939
Estimating partial-load performance of large reheat turbine-generator units ... 1360
Fork-truck stability—a study in moments ... 1591
Graphical method for the analysis of piecewise linear control systems, with particular application to relay controls ... 841
Graphical shoe-brake analysis ... 1322
Losses in pipe and fittings ... 1767
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems ... 675
Rate of temperature change of simple shapes ... 1742
Vibration design charts ... 1459
GRAVES, C. C.
Pressure drop and air-flow distribution in gas-turbine combustors ... 1601
GRIMBLE, R. E.
Pressure drop for parallel flow through rod bundles ... 1751
GRINDING
Influence of grinding fluids upon residual stresses in hardened steel ... 149
GRINNELL, S. K.
Design study of a hydrostatic gas bearing with inherent orifice compensation ... 11
GROBMAN, J. S.
Pressure drop and air-flow distribution in gas-turbine combustors ... 1601
GROGAN, E. C.
On the dynamics of pneumatic transmission lines ... 853
GROSH, R. J.
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I (D) ... 905
GURNEY, W. B.
Information center with automatic logger and scanner—Neches Power Station, Gulf States Utilities Company ... 1652

H

HAHN, R. S.
Some experiments on the influence of various factors on drill performance (D) ... 225
HALL, A. S., JR.
Application of complex geometry to relative velocities and accelerations in mechanisms (D) ... 692
Kinematic analysis and synthesis using collineation-axis equations (D) ... 1312
HAMRICK, J. T.
Problems encountered in the translation of compressor performance from one gas to another (D) ... 897
HANDIN, JOHN
Strength characteristics of rock samples under hydrostatic pressure (D) ... 706
HARINGX, J. A.
Design of corrugated diaphragms ... 55
Investigations of the properties of corrugated diaphragms (D) ... 81
HARLOW, J. H.
Engineering the Eddystone plant for 5000-lb 1200-deg steam ... 1410
HARPER, D. B.
Seal leakage in the rotary regenerator and its effect on rotary-regenerator design for gas turbines ... 233
HARRIS, G. T.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) ... 1393
HARTMANN, M. J.
Problems encountered in the translation of compressor performance from one gas to another ... 887
HARTNER, H. E.
Force relationships in the machining of low-carbon steels of different sulphur contents ... 1155
HARTNETT, J. P.
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux ... 1551
Experimental study of the velocity and temperature distribution in a high-velocity vortex-type flow ... 751
Mass-transfer cooling in a laminar boundary layer with constant fluid properties ... 247
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic ... 1079
HAWKINS, G. A.
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems ... 675
HAYASHI, CHIHIRO
Nonlinear phenomena (D) ... 443
HEAT-EXCHANGE EQUIPMENT
Effect of condensate reheat on mean temperature difference in feedwater heater subcooling zones ... 1494
Flow through annular orifices ... 593
Generalized optimal heat-exchanger design ... 653
Mean-temperature difference in one, two, and three-pass crossflow heat exchangers ... 287
New way to simplify the steam power plant ... 1115
Seal leakage in the rotary regenerator and its effect on rotary-regenerator design for gas turbines ... 233
HEAT TRANSFER. *See also* BEARINGS, THERMAL STRESSES
Convection phenomena in fluids heated from below ... 299
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids ... 1197
Effect of axial fluid conduction on heat transfer in the entrance regions of parallel plates and tubes ... 765
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux ... 1551
Fuel elements for nuclear reactors ... 29
Heat-transfer and flow friction characteristics of woven-screen and crossed-rod matrixes ... 1558
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation ... 1727
Heat transfer in a pipe with turbulent flow and arbitrary wall-temperature distribution ... 789
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I ... 899
Heat transfer to laminar boundary layers with variable free-stream velocity ... 1545
Heat transfer to lead-bismuth in turbulent flow in an annulus ... 1514
Mass-transfer cooling in a laminar boundary layer with constant fluid properties ... 247
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems ... 675
Natural-convection heat transfer from a horizontal cylinder rotating in air ... 741
New finite-difference technique for solution of the heat-conduction equation, especially near surfaces with convective heat transfer ... 1319
Rate of temperature change of simple shapes ... 1742
Solving the melting problem using the electric analogy to heat conduction ... 759
Specific heats of liquid metals and liquid salts ... 23
Temperature and velocity distribution and transfer of heat in a liquid metal ... 279
Tests of free convection in a partially enclosed space between two heated vertical plates ... 663
Theoretical analysis of heat transfer in natural convection and in boiling ... 1501
Transient air temperatures in a duct ... 1536
Turbulent free-convection, heat-transfer rates in a horizontal pipe ... 1185
HEGETSCHWEILER, H.
Estimating partial-load performance of large reheat turbine-generator units (D) ... 1368
Predicting performance of large steam turbine-generator units for central stations ... 1085
HEISLER, M. P.
Rate of temperature change of simple shapes (D) ... 1748
HENDRICKSON, G. A.
Estimating partial-load performance of large reheat turbine-generator units (D) ... 1368
HERSEY, M. D.
Recent research on flat diaphragms and circular plates with particular reference to instrument applications (D) ... 87
Testing dynamically loaded bearings

HERSEY (*continued*)
I, a short history of bearing test machines ... 1247
II, a diesel-engine bearing test machine ... 1260
Universal bearing tester (D) ... 1274

HESSELSCHWERDT, A. L., JR.
Instrumenting a field study of industrial water-cooling tower performance (D) ... 1683

HICKEL, R. O.
Research on application of cooling to gas turbines ... 645

HIGGINS, T. J.
Optimum nonlinear control (D) ... 545
Résumé of the development and literature of nonlinear control-system theory ... 445

HIGH-FREQUENCY HEATING
How RF concerns the wood industry ... 603

HIGH-TEMPERATURE MATERIALS. *See also* STEEL ALLOYS
Oronite high temperature hydraulic fluids 8200 and 8515 ... 1029

HIGH-TEMPERATURE RESEARCH
Utilization of solar furnaces in high-temperature research ... 1019

HINKLE, R. T.
Application of complex geometry to relative velocities and accelerations in mechanisms (D) ... 693

HIRST, W.
Statistical analysis of a wear process (A) ... 1246

HISTORY. *See also* TESTING MACHINES
Power from solar energy ... 1349

HLINKA, J. W.
Rate of temperature change of simple shapes ... 1742

HOE, R. J.
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I ... 899

HOKE, J. H.
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation ... 307

HOLVENSTOT, C. E.
Future developments of the high-speed diesel engine (D) ... 1950

HOPKINS, W. E.
Predicting performance of large steam turbine-generator units for central stations (D) ... 1113

HORGAN, J. D.
Résumé of the development and literature of nonlinear control-system theory (D) ... 450

HOWARTH, E. S.
Forces and power required to turn aluminum and seven alloys (D) ... 914

HOWLAND, W. E.
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems ... 675

HSU, S. T.
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids ... 1197

HUGHES, W. F.
Heat-transfer effects in hydrostatic thrust-bearing lubrication ... 1225
On the adiabatic Couette flow of a compressible fluid ... 1313

HUNTER, A. T.
First commercial supercritical-pressure steam-electric generating unit for Philo Plant (D) ... 406

HUNTING. *See* SERVOMECHANISMS

HUSA, H. W.
Cutting-fluid evaluation ... 1172

HUSSMANN, A. W.
Combustion system for spark-fired gas engines using diesel compression ratios (D) ... 821
Future developments of the high-speed diesel engine (D) ... 1951

HUTCHISON, D. H.
Instrumenting a field study of industrial water-cooling tower performance (D) ... 1683

HYDRAULIC CONTROL. *See* HYDRAULIC DRIVES, VALVES

HYDRAULIC DRIVES. *See also* AIRPLANE HYDRAULIC SYSTEMS
Contributions to hydraulic control—7, analysis of the effects of nonlinearity in a valve-controlled hydraulic drive ... 427

HYDRAULIC FLUIDS
Oronite high temperature hydraulic fluids 8200 and 8515 ... 1029

HYDRAULICS
Computer representations of engineering systems involving fluid transients ... 1840

HYDRODYNAMICS. *See also* BEARINGS, LUBRICATION
Compensation of steady-state flow forces in spool-type hydraulic valves ... 1784
Drag-turbine performance ... 1291
Experimental study of centrifugal-pump impellers ... 1821

HYDROSTATIC TESTING
Strength characteristics of rock samples under hydrostatic pressure ... 695

I

IBERALL, A. S.
On the dynamics of pneumatic transmission lines (D) ... 869

IGNITION. *See* JET IGNITION

IMPELLERS
Effect of the volute on performance of a centrifugal-pump impeller ... 1057
Experimental study of centrifugal-pump impellers ... 1821

INDUSTRIAL FURNACES
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation ... 1727

INDUSTRIAL TRUCKS
Fork-truck stability—a study in moments ... 1591

INERTIA DAMPER. *See* SERVOMECHANISMS

INERTIAL NAVIGATION
Measurement and integration of acceleration in inertial navigation ... 1571

INSTRUMENTS
Information center with automatic logger and scanner—Neches Power Station, Gulf States Utilities Company ... 1652
Instrumentation for steam-consumption tests on medium steam turbine-generator sets ... 357
Instrumenting a field study of industrial water-cooling tower performance ... 1679
Measurement and integration of acceleration in inertial navigation ... 1571
Procedures for testing large steam turbine-generators in central stations ... 365
Recent research on flat diaphragms and circular plates with particular reference to instrument applications ... 83

INSTRUMENTS—PRESSURE. *See also* DIAPHRAGMS
Experimental arrangement for the measurement of the pressure distribution on high-speed rotating blade rows ... 617

INSTRUMENTS—TEMPERATURE
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids ... 1197
Estimation of temperature patterns in multiply-shielded systems ... 1722
Method for presenting the response of temperature-measuring systems ... 1851
Response of temperature-sensing-element analogs ... 1857
Transient air temperatures in a duct ... 1536

INVENTORIES
Applying linear programming to inventory planning in a seasonal market—a case study ... 809

IRWIN, L. K.
Delayed-yield time effects in mild steel under oscillatory axial loads (D) ... 1625

IZAWA, KEISUKE
Signal stabilization of a control system (D) ... 1871

J

JACKSON, L. R.
Application of a new structural index to compare titanium alloys with other materials in airframe structures ... 949

JACKSON, R. L.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines ... 1669

JAY, R. D.
Fork-truck stability—a study in moments ... 1591

JENKINS, A. E.
Heat transfer to lead-bismuth in turbulent flow in an annulus (D) ... 1517

JENSEN, L. K.
Fork-truck stability—a study in moments (D) ... 1598

JET ENGINES. *See* GAS TURBINES

JET IGNITION
Combustion systems for spark-fired gas engines using diesel compression ratios ... 815

JOHNSON, H. A.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic ... 1079

JOHNSON, H. M.
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels ... 921

JOHNSON, K. E.
Cooling towers for steam-electric stations—selection and performance experience (D) ... 1695

JONES, M. H.
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties ... 117

JONES, S. B.
Comparative machinability of B1113-C1213—C1120HR—C1120CD and C1119 steels (D) ... 919

JORDAN, T. F.
Some studies of angle relationships in metal cutting ... 127

JOSEPH, H. H.
Pressure-flow characteristics of pneumatic valves (D) ... 1586

JURSIK, J.
Dual-mode damper-stabilized servo ... 473

K

KAISER, J. F.
Dual-mode damper-stabilized servo ... 473

KALMAN, R. E.
Physical and mathematical mechanisms of instability in nonlinear automatic control systems ... 553

KATZ, ISRAEL
Future developments of the high-speed diesel engine (D) ... 1952

KAYAN, C. F.
Analysis of a process-fluid-flow network by electrical analogy ... 1957

KELLER, CURT
Operating experience and design features of closed-cycle gas-turbine power plants ... 627

KELLER, G. R.
Oronite high temperature hydraulic fluids 8200 and 8515 (D) ... 1036

KEMENY, G. A.
Effect of ambient and fuel pressure on nozzle spray angle ... 607

KENNEDY, R. G.
Some experiments on the influence of various factors on drill performance (D) ... 224

KERR, S. L.
Computer representations of engineering systems involving fluid transients (D) ... 1849

KESSLER, G. W.
Engineering the Eddystone steam generator for 5000-psig, 1200-F steam (D) ... 1457

KIMBALL, D. E.
Instrumentation for steam-consumption tests on medium steam turbine-generator sets ... 357

KINDERMAN, W. J.
Fluid flow through two orifices in series, III—the parameters of metastable and stable flow of hot water ... 183

KINEMATICS
Application of complex geometry to relative velocities and accelerations in mechanisms ... 687
Kinematic analysis and synthesis using collineation-axis equations ... 1305

KINZBACH, R. B.
Apparent frictional forces on clamping elements as used in the oil industry (D) ... 1635

KITTREDGE, C. P.
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings ... 1759

KLEVEN, P. S.
Oronite high temperature hydraulic fluids 8200 and 8515 (D) ... 1036

KLINE, S. J.
Practical application of uncertainty calculations to measured data (D) ... 375

KLOTTER, KARL
How to obtain describing functions for nonlinear feedback systems 509
Nonlinear phenomena (D) 443
Physical and mathematical mechanisms of instability in nonlinear automatic control systems (D) 564
Vibration design charts (D) 1475

KOLLMANN, KARL
Testing dynamically loaded bearings—1 a short history of bearing test machines (D) 1257

KRAFT, HANS
Investigation of the end-wall boundary layer of a turbine-nozzle cascade (D) .. 1805

KRATZ, E. M.
Procedures for testing large steam turbine-generators in central stations 365

KREISLE, L. F.
Predominant-peak surface roughness, a criterion for minimum hydrodynamic oil-film thickness of short journal bearings 1235
Properties of misaligned journal bearings (D) 1211

KREITH, FRANK
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers 1070
Tests of free convection in a partially enclosed space between two heated vertical plates (D) 670

KRIEG, E. H.
Predicting performance of large steam turbine-generator units for central stations (D) 1113

KRONAUER, R. E.
Skewed boundary-layer flow near the end walls of a compressor cascade (D) 1797

KRONENBERG, M.
On the drilling of metals 2—the torque and thrust in drilling (D) 147

KU, Y. H.
Phase-space method for analysis of nonlinear control systems 1897
Résumé of the development and literature of nonlinear control-system theory (D) 451

KUBA, R. E.
Résumé of the development and literature of nonlinear control-system theory (D) 451

KUEHN, F. W.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines (D) ... 1675

KULJIAN, H. A.
New way to simplify the steam power plant 1115

L

LANDIS, F.
Mean-temperature difference in one, two, and three-pass crossflow heat exchangers (D) 296

LANKFORD, W. T.
Force relationships in the machining of low-carbon steels of different sulphur contents 1155

LANZKRON, ROLF W.
Résumé of the development and literature of nonlinear control-system theory (D) 451

LAPPING. *See* METAL FINISHING

LARINOFF, M. W.
Cooling towers for steam-electric stations—selection and performance experiences 1685

LARROWE, V. L.
Dynamic performance computer for gas-turbine engines 1707

LARSON, R. F
Theoretical analysis of heat transfer in natural convection and in boiling (D).. 1510

LEAD-BISMUTH. *See* FLOW OF FLUIDS, HEAT TRANSFER

LEADED STEEL. *See* METAL CUTTING

LEE, S.-Y.
Compensation of steady-state flow forces in spool-type hydraulic valves (D) 1788

LEES, SIDNEY
Design basis for cascade-type positional servomechanisms 1873

LEIST, K.
Experimental arrangement for the measurement of the pressure distribution on high-speed rotating blade rows 617

LENA, A. J.
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels 921

LEQUEAR, H. A.
Certain departures from plastic ideality at small strains 97

LESTER, JOSEPH T., JR.
Two applications of a digital computer to machine-design problems 1476

LETNER, H. R.
Influence of grinding fluids upon residual stresses in hardened steel 149

LE TOURNEAU, B. W.
Pressure drop for parallel flow through rod bundles 1751

LEWIS, T. G., JR.
Ultrafinishing—a new high-precision lapping process 1699

LI, Y. T.
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals (D) 487

LINEAR PROGRAMMING. *See* INVENTORIES

LINKAGES. *See* MECHANISMS

LINNARD, R. E.
Preventive of destructive engine failure by spectrographic analysis of crankcase oils 709

LINNERT, G. E.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) 1395

LIQUID METALS. *See* FLOW OF FLUIDS, HEAT TRANSFER, MERCURY

LIQUIDS
Specific heats of liquid metals and liquid salts 23

LIVINGOOD, J. N. B.
Research on application of cooling to gas turbines 645

LIVINGSTON, R. G.
New automatic dispatching system at Kansas City (D) 1668

LLOYD, E. C.
Investigations of the properties of corrugated diaphragms 65

LOCOMOTIVES. *See* ADHESION (RAIL)

LOEWEN, E. G.
Influence of lead on metal-cutting forces and temperatures 1143
Leaded steel and the real area of contact in metal cutting 1165

LOGGING. *See* AUTOMATIC CONTROL, POWER PLANTS—STEAM

LONDON, A. L.
Heat-transfer and flow-fraction characteristics of woven-screen and crossed-rod matrixes 1558

LOONEY, ROBERT
Method for presenting the response of temperature-measuring systems 1851

LOZIECKY, P. J.
Design and development of a two-cycle turbocharged diesel engine 1929

LUBAHN, J. D.
Certain departures from plastic ideality at small strains 97
On the applicability of notch tensile test data to strength criteria in engineering design 111

LUBARSKY, B.
Heat transfer to lead-bismuth in turbulent flow in an annulus (D) 1517

LUBRICANTS AND LUBRICATION. *See also* BEARINGS
Electrical effects accompanying the stick-slip phenomenon of sliding of metals on plastics and lubricated surfaces 1963
Fluid dynamic theory of gas-lubricated bearings 1218
Heat-transfer effects in hydrostatic thrust-bearing lubrication 1225
On the adiabatic Couette flow of a compressible fluid 1313
On the theory of grease-lubricated thrust bearings 1229
Predominant-peak surface roughness, a criterion for minimum hydrodynamic oil-film thickness of short journal bearings 1235
Prevention of destructive engine failure by spectrographic analysis of crankcase oils 709
Temperature distribution in the journal-bearing lubricant film 343

LUDEKE, C. A.
Nonlinear phenomena 439

LULA, R. A.
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels 921

M

MCCARTHY, W. J., JR.
Safeguard features of a fast-breeder-reactor power plant 41

MCCLURE, J. B.
New automatic dispatching system at Kansas City (D) 1668

MCDOWELL, D. W., JR.
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler 319

MACDUFF, J. N.
Vibration design charts 1459

MACHINABILITY. *See* METAL CUTTING

MACHINE DESIGN. *See also* MECHANISMS
On the applicability of notch tensile test data to strength criteria in engineering design 111

MACHINE TOOLS. *See* DRILLS

MACHINING. *See* METAL CUTTING

MACMILLAN, R. H.
Graphical method for the analysis of piecewise linear control systems, with particular application to relay controls. 841

MAGER, ARTUR
Skewed boundary-layer flow near the end walls of a compressor cascade (D) 1797

MAGINNISS, F. J.
Application of digital computers to bearing design 1483

MAINTENANCE
Maintenance factors affecting production costs 173
Plant management and other factors affecting maintenance costs in steam-generating stations 161

MANAGEMENT. *See* COST ANALYSIS, EQUIPMENT REPLACEMENT, INVENTORIES, MAINTENANCE

MANJOINE, M. J.
Creep characteristics of type 347 stainless steel at 1050 and 1100 F in tension and compression 1921
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties (D) 125
On the applicability of notch tensile test data to strength criteria in engineering design (D) 115

MANN, J. W.
How RF concerns the wood industry ... 603

MANUFACTURING. *See also* EQUIPMENT REPLACEMENT
Applying linear programming to inventory planning in a seasonal market—a case study 809

MAR, J. W.
Some structural penalties associated with thermal flight 990

MARCO, S. M.
Effects of complex stress-time cycles on the fatigue properties of metals 1329

MARKL, A. R. C.
Investigation of thermal-stress fatigue as related to high-temperature piping flexibility (D) 1649
Losses in pipe and fittings (D) 1781
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings (D) 1765

MARTIN, G. H.
Application of complex geometry to relative velocities and accelerations in mechanisms 687

MATERIALS HANDLING. *See also* INDUSTRIAL TRUCKS
Methods of refueling heterogeneous nuclear reactors 47

MATHEMATICS. *See also* ELECTRIC ANALOGY, GRAPHICAL METHODS, NONLINEAR SYSTEMS
Criteria for validity of lumped-parameter representation of ducting airflow characteristics 833
Design basis for cascade-type positional servomechanisms 1873
Generalized optimal heat-exchanger design 653
Investigations of the properties of corrugated diaphragms 65
New finite-difference technique for solution of the heat-conduction equation,

MATHEMATICS (*continued*)
especially near surfaces with convective heat transfer ... 1519
Practical application of uncertainty calculations to measured data ... 373

MATRIXES. *See* SCREENS

MAUSTELLER, J. W.
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I (D). 906

MAYER, E.
Estimation of temperature patterns in multiply-shielded systems ... 1722

MAYERS, M. A.
An effort to use a laboratory test as an index of combustion performance (D) 1183
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation (D) ... 1739

MCLAIN, STUART
Methods of refueling heterogeneous nuclear reactors ... 47

MCMATH, F. C.
Safeguard features of a fast-breeder-reactor power plant ... 41

MCMILLAN, J.
Method for presenting the response of temperature-measuring systems (D). 1855
Responses of temperature-sensing-element analogs (D) ... 1866

MECHANICS
Nonlinear phenomena ... 439

MECHANISMS
Application of complex geometry to relative velocities and accelerations in mechanisms ... 687
Kinematic analysis and synthesis using collineation-axis equations ... 1305
Two applications of a digital computer to machine-design problems ... 1476

MELLOR, G. L.
Skewed boundary-layer flow near the end walls of a compressor cascade (D). 1798

MELTING. *See* ELECTRIC ANALOGY, HEAT TRANSFER

MERCURY
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I ... 899
Temperature and velocity distribution and transfer of heat in a liquid metal. 279

METAL CREEP
Certain departures from plastic ideality at small strains ... 97
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties ... 117
Nonhomogeneous yielding of steel cylinders, 1—mild steel ... 1608

METAL CUTTING. *See also* GRINDING
Comparative machinability of B1113—C1213—C1120 HR—C1120 CD and C1119 steels ... 915
Cutting-fluid evaluation ... 1172
Force relationships in the machining of low carbon steels of different sulphur contents ... 1155
Forces and power required to turn aluminum and seven alloys ... 909
Influence of lead on metal-cutting forces and temperatures ... 1143
Leaded steel and the real area of contact in metal cutting ... 1165
On the drilling of metals, 2—the torque and thrust in drilling ... 139
Some experiments on the influence of various factors on drill performance ... 191
Some studies of angle relationships in metal cutting ... 127

METAL EXTRUSION
Residual stresses in cold extruded aluminum ... 155

METAL FATIGUE. *See also* METAL TESTING—FATIGUE
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A ... 89

METAL FINISHING
Ultrafinishing—a new high-precision lapping process ... 1699

METAL FORMING
Spring back of metals ... 1

METAL ROLLING
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels ... 921

METAL TESTING
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties ... 117
Delayed-yield time effects in mild steel under oscillatory axial loads ... 1619

METAL TESTING (*continued*)
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation ... 307
Nonhomogeneous yielding of steel cylinders, 1—mild steel ... 1608

METAL TESTING—COMBINED-STRESS
Flow and fracture of nodular cast iron 1911

METAL TESTING—COMPRESSION
Application of a new structural index to compare titanium alloys with other materials in airframe structures ... 949
Thermostructural efficiencies of compression elements and materials ... 967

METAL TESTING—CREEP
Certain departures from plastic ideality at small strains ... 97
Creep characteristics of type 347 stainless steel at 1050 and 1100 F in tension and compression ... 1921

METAL TESTING—FATIGUE
Effect of complex stress-time cycles on the fatigue properties of metals ... 1329
Fatigue of metals under combinations of stresses ... 1337
Investigation of thermal-stress fatigue as related to high-temperature piping flexibility ... 1637

METAL TESTING—TENSION
On the applicability of notch tensile test data to strength criteria in engineering design ... 111

METALLURGY. *See also* STEEL ALLOYS
Creep characteristics of type 347 stainless steel at 1050 and 1100 F in tension and compression ... 1921
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation ... 307
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler ... 319

METALS. *See also* LIQUIDS
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids ... 1197

MEYER, W. E.
Temperature distribution in the journal-bearing lubricant film ... 343

MILLER, H. A.
Nonlinear integral compensation of a velocity-lag servomechanism with backlash ... 585

MILLER, R. R.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (D) ... 1083

MILLER, RALPH
Design and development of a two-cycle turbocharged diesel engine (D) ... 1939
Future developments of the high-speed diesel engine (D) ... 1953

MILLS, R. R., JR.
Generalized optimal heat-exchanger design ... 653

MIN, T. C.
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux (D) ... 1556

MINORSKY, N.
Résumé of the development and literature of nonlinear control-system theory (D) ... 451

MITCHELL, S. W. W.
Predicting performance of large steam turbine-generator units for central stations (D) ... 1113

MIXING
Use of nonlinear valve characteristics in the control of a simple blending process ... 329

MODELS
Design study of a hydrostatic gas bearing with inherent orifice compensation ... 11

MOFFETT, D. W.
Applying linear programming to inventory planning in a seasonal market—a case study ... 809

MOLLIER DIAGRAM. *See* THERMODYNAMICS

MOMENTS. *See* APPLIED MECHANICS

MOORE, D. H.
Résumé of the development and literature of nonlinear control-system theory (D) ... 452

MOORE, R. W., JR.
Skewed boundary-layer flow near the end walls of a compressor cascade ... 1789

MORETON, D. H.
Oronite high temperature hydraulic fluids 8200 and 8515 (D) ... 1037

MORGAN, D. W. R., JR.
Estimating partial-load performance of large reheat turbine-generator units ... 1360

MOSER, E. I.
Apparent frictional forces on clamping elements as used in the oil industry ... 1627

MUELLER, E. L.
New automatic dispatching system at Kansas City ... 1663

MURPHY, G. J.
Résumé of the development and literature of nonlinear control-system theory (D) ... 452

MURPHY, J. J.
Investigation of thermal-stress fatigue as related to high-temperature piping flexibility (D) ... 1650

MUZZEY, C.
Nonlinear analog study of a high-pressure pneumatic servomechanism (D) ... 472

MYER, C. F.
Analysis and design of a servomotor operating on high-pressure compressed gas (D) ... 883

N

NACHTMAN, E. S.
Force relationships in the machining of low-carbon steels of different sulphur contents (D) ... 1164
Influence of lead on metal-cutting forces and temperatures (D) ... 1153
Leaded steel and the real area of contact in metal cutting (D) ... 1171

NATURAL-GAS PIPELINES. *See also* COMPRESSORS

NEWCOMB, W. K.
Combustion system for spark-fired gas engines using diesel compression ratios (D) ... 821

NEWMAN, D. P.
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties ... 117

NEW ZEALAND
Flow sampling and discharge measurement in geothermal bores ... 269
New Zealand thermal area and its development for power production ... 255

NICHOLS, N. B.
Nonlinear integral compensation of a velocity-lag servomechanism with backlash ... 585
Use of nonlinear valve characteristics in the control of a simple blending process (D) ... 336

NODULAR IRON. *See* CAST IRON

NOISE. *See* ACOUSTICS

NONLINEAR SYSTEMS
Basic methods for nonlinear control-system analysis ... 497
Contributions to hydraulic control—7, analysis of the effects of nonlinearity in a valve-controlled hydraulic drive ... 427
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism ... 513
Determination of the characteristics of multi-input and nonlinear systems from normal operating records ... 567
How to obtain describing functions for nonlinear feedback systems ... 509
Nonlinear analog study of a high-pressure pneumatic servomechanism ... 465
Nonlinear integral compensation of a velocity-lag servomechanism with backlash ... 585
Nonlinear phenomena ... 439
On the analysis of linear and nonlinear systems ... 547
Optimum nonlinear control ... 527
Phase-space method for analysis of nonlinear control systems ... 1897
Physical and mathematical mechanisms of instability in nonlinear automatic control systems ... 553
Representation of nonlinear functions of two input variables on analog equipment ... 489
Résumé of the development and literature of nonlinear control-system theory ... 445

NORRIS, R. H.
Tests of free convection in a partially enclosed space between two heated vertical plates ... 663

NOTTAGE, H. B.
New Zealand thermal area and its development for power production (D). 268

NOWAK, M. J.
Optimum nonlinear control (D) 542

NOZZLES
Design of supersonic expansion nozzles and calculation of isentropic exponent for chemically reacting gases 1527
Effect of ambient and fuel pressure on nozzle spray angle 607
Investigation of the end-wall boundary layer of a turbine-nozzle cascade 1801

O

OAKLEY, D. J.
Turbulent free-convection, heat-transfer rates in a horizontal pipe 1185

OBERHUBER, W. F.
Maintenance factors affecting production costs 173

OCVIRK, F. W.
Properties of misaligned journal bearings 1205

OIL FUEL
Effect of ambient and fuel pressure on nozzle spray angle 607

OLDENBURGER, RUFUS
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism (D) 523
Dual-mode damper-stabilized servo (D) 479
Optimum nonlinear control 527
Signal stabilization of a control system. 1869

O'REILLY, JOHN
Plant management and other factors affecting maintenance costs in steam-generating stations (D) 171

ORIFICES. *See* FLOW OF FLUIDS, FLUID METERS

ORNING, A. A.
An effort to use a laboratory test as an index of combustion performance (D) 1183

OSCILLATION. *See* METAL TESTING

OSTERLE, J. F.
Fluid-dynamic theory of gas-lubricated bearings (D) 1223
Heat-transfer effects in hydrostatic thrust-bearing lubrication 1225
On the adiabatic Couette flow of a compressible fluid 1313
Spring-supported thrust bearing 351

OSTRACH, SIMON
Convection phenomena in fluids heated from below 299

OTIS, D. R.
Solving the melting problem using the electric analogy to heat conduction .. 759

OXFORD, C. J., JR.
On the drilling of metals, 2—the torque and thrust in drilling 139
Some experiments on the influence of various factors on drill performance (D) 225

ÖZDAS, M. N.
Testing dynamically loaded bearings—I, a short history of bearing test machines (D) 1257

P

PARCE, J. Y.
Estimating partial-load performance of large reheat turbine-generator units (D) 1369

PARTICLES. *See* SPRAYS

PARTRIDGE, E. P.
Engineering the Eddystone steam generator for 5000-psig, 1200-F steam (D) 1457
First commercial supercritical-pressure steam-electric generating unit for Philo Plant (D) 406

PASCHKIS, VICTOR
Rate of temperature change of simple shapes 1742

PASLAY, P. R.
On the theory of grease-lubricated thrust bearings 1229

PAYNTER, H. M.
Computer representations of engineering systems involving fluid transients 1840
Method for presenting the response of temperature-measuring systems (D). 1855
Responses of temperature-sensing-element analogs (D) 1865
Transient air temperatures in a duct (D). 1541

PEELER, R. L.
Oronite high temperature hydraulic fluids 8200 and 8515 1029

PESCE, G. V.
Pressure-flow characteristics of pneumatic valves (D) 1587

PETROLEUM REFINING
Materials aspect of some high-temperature, refinery-piping applications 715

PETROLEUM-WELL EQUIPMENT
Apparent frictional forces on clamping elements as used in the oil industry ... 1627

PHOTOELASTICITY
Curved beams with eccentric boundaries. 1317

PHYSIOLOGY
Description and prediction of human response to aircraft thermal environments 1024

PIGOTT, R. J. S.
Losses in pipe and fittings 1767
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings (D) 1765
Universal bearing tester 1267

PINKUS, O.
Analysis of journal bearings with arbitrary load vector 1213
Maximum temperature profile in journal bearings 337
Temperature distribution in the journal-bearing lubricant film (D) 349

PINSLEY, E. A.
Skewed boundary-layer flow near the end walls of a compressor cascade (D) 1799

PIPE AND PIPING
Austenitic steels in high-temperature steam piping 1398
Eight years of experience with austenitic steel piping materials at elevated steam conditions 1371
Materials aspect of some high-temperature, refinery-piping applications 715
Metallurgical considerations of main steam piping for high-temperature, high-pressure service 1377

PIPE BENDS
Effect of internal pressure on flexibility and stress-intensification factors of curved pipe or welding elbows 939

PIPE FITTINGS. *See* VALVES

PIPE LINES
On the dynamics of pneumatic transmission lines 853

PIPING SYSTEMS
Effect of internal pressure on flexibility and stress-intensification factors of curved pipe or welding elbows 939
Investigation of thermal-stress fatigue as related to high-temperature piping flexibility 1637

PLANT LOCATION
Safeguard features of a fast-breeder-reactor power plant 41

PLASTICITY. *See also* METAL CREEP

PLATES. *See* DIAPHRAGMS, FLOW OF FLUIDS

PNEUMATIC DEVICES. *See also* SERVOMECHANISMS, VALVES
Comparison of hydraulic and pneumatic accessory power generation 1284
On the dynamics of pneumatic transmission lines 853

POLLOCK, W. A.
Instrumentation for steam-consumption tests on medium steam turbine-generator sets (D) 364

PORITSKY, H.
Hunting due to lost motion 577

POUCHOT, W. D.
Pressure drop and air-flow distribution in gas-turbine combustors (D) 1607

POWELL, E. M.
Avon No. 8—a supercritical-pressure plant (D) 936
Engineering the Eddystone steam generator for 5000-psig, 1200-F steam ... 1447

POWELL, H. N.
Application of an enthalpy-fuel/air ratio diagram to "first law" combustion problems 1129

POWER. *See also* SOLAR ENERGY

POWER PLANTS—GAS-TURBINE
Operating experience and design features of closed-cycle gas-turbine power plants 627

POWER PLANTS—HYDROELECTRIC. *See* POWER SYSTEMS

POWER PLANTS—NUCLEAR
Fuel elements for nuclear reactors 29
Methods of refueling heterogeneous nuclear reactors 47

POWER PLANTS—NUCLEAR (*continued*)
Operating experience and design features of closed-cycle gas-turbine power plants 627
Reactor shielding 35
Safeguard features of a fast-breeder-reactor power plant 41

POWER PLANTS—STEAM. *See also* COOLING TOWERS, PIPE AND PIPING, POWER SYSTEMS, STEAM TURBINES, TURBINE TESTING
Analytic procedure for optimizing the selection of power-plant components. 1120
Avon No. 8—a supercritical-pressure plant 927
Eddystone superpressure unit 1431
Engineering the Eddystone plant for 5000-lb 1200-deg steam 1410
Engineering the Eddystone steam generator for 5000-psig, 1200-F steam ... 1447
First commercial supercritical-pressure steam-electric generating unit for Philo Plant 389
First commercial supercritical-pressure steam generator for Philo Plant 409
First commercial supercritical-pressure steam turbine—built for the Philo Plant 417
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines 1669
Information center with automatic logger and scanner—Neches Power Station, Gulf States Utilities Company .. 1652
New way to simplify the steam power plant 1115
New Zealand thermal area and its development for power production 255
Noise, vibration, and measurement problems, resulting from fluid-flow disturbances 1043
Plant management and other factors affecting maintenance costs in steam-generating stations 161
Predicting performance of large steam turbine-generator units for central stations 1085

POWER SYSTEMS
Integration of steam and hydro power in Northern California 433
New automatic dispatching system at Kansas City 1663

PRESSURE DROP. *See* FLOW OF FLUIDS

PRESSURE GAGES. *See* INSTRUMENTS—PRESSURE

PROFOS, P.
Transient air temperatures in a duct (D). 1542

PROPERTIES OF MATERIALS
Specific heats of liquid metals and liquid salts 23

PUDER, R. W.
Fork-truck stability—a study in moments 1591

PUMPS—CENTRIFUGAL. *See* IMPELLERS

PUMPS—JET
Jet-pump theory and performance with fluids of high viscosity 1807

PURVIS, M. B.
Temperature distribution in the journal-bearing lubricant film 343

R

RF HEATING. *See* HIGH-FREQUENCY HEATING

RADIATION. *See* HEAT TRANSFER

RADIOACTIVITY
Reactor shielding 35

RAILROAD RAILS. *See* ADHESION (RAIL)

RANKIN, A. W.
Austenitic steels in high-temperature steam piping 1398
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) 1396

RAUDEBAUGH, R. J.
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler 319

REA, S. E.
Transient air temperatures in a duct ... 1536

REACTORS. *See* POWER PLANTS—NUCLEAR

REASER, W. W.
Comparison of hydraulic and pneumatic accessory power generation (D). 1290

REED, J. C.
Power from solar energy (D) 1358

REETHOF, GERHARD
Analysis and design of a servomotor operating on high-pressure compressed gas ... 875
Pressure-flow characteristics of pneumatic valves (D) ... 1589

REEVES, E. I.
Contributions to hydraulic control—7, analysis of the effects of nonlinearity in a valve-controlled hydraulic drive. 427

REFRIGERANTS
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range ... 681

REGENERATORS. *See* GAS TURBINES, HEAT-EXCHANGE EQUIPMENT

REHEAT. *See* STEAM TURBINES

REICH, J. A.
Information center with automatic logger and scanner—Neches Power Station, Gulf States Utilities Company ... 1652

REISINGER, R. H.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines (D) ... 1676

REMOTE CONTROL
Methods of refueling heterogeneous nuclear reactors ... 47

RHEINGANS, W. J.
Cavitation characteristics of gate valves and globe valves used as flow regulators under heads up to about 125 feet (D) ... 1282

RICHARD, K.
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties (D) ... 125

RICHARDSON, D. L.
Skewed boundary-layer flow near the end walls of a compressor cascade ... 1789

RICHARDSON, H. H.
Design study of a hydrostatic gas bearing with inherent orifice compensation ... 11

RIDEOUT, V. C.
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism (D) ... 524

RIGHTMIRE, B. G.
Statistical analysis of a wear process ... 1242

RIVAS, M. A., JR.
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (D) ... 1074

RIVIERE, MICHEL
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation (D) ... 1739

RIZIKA, J. W.
Transient air temperatures in a duct (D). 1542

ROBERTSHAW, T. L.
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels (D) ... 926

ROCKS
Strength characteristics of rock samples under hydrostatic pressure ... 695

RODABAUGH, E. C.
Effect of internal pressure on flexibility and stress-intensification factors of curved pipe or welding elbows ... 939

ROGERS, J. J. W.
Strength characteristics of rock samples under hydrostatic pressure (D) ... 707

ROHMANN, C. P.
On the dynamics of pneumatic transmission lines ... 853

ROHRIG, I. A.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) ... 1396

ROHSENOW, W. M.
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range ... 681

ROSS, F. F.
Cooling towers for steam-electric stations—selection and performance experiences (D) ... 1695
Engineering the Eddystone plant for 5000-lb 1200-deg steam (D) ... 1430

ROSSHEIM, D. B.
Investigation of thermal-stress fatigue as related to high-temperature piping flexibility (D) ... 1650

ROWAND, W. H.
First commercial supercritical-pressure steam generator for Philo Plant ... 409

ROWLEY, D. S.
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings ... 1759

RUPTURE. *See* METAL TESTING

RYDER, E. A.
Properties of misaligned journal bearings (D) ... 1211

S

SAFETY ENGINEERING. *See also* POWER PLANTS—NUCLEAR
Discussion on safety-factor requirements for supersonic aircraft structures ... 986

SAGE, B. H.
Mollier diagrams for water near bubble point ... 1192

SAIBEL, EDWARD
Spring-supported thrust bearing ... 351

SALTS. *See* LIQUIDS

SAMPLING
Practical application of uncertainty calculations to measured data ... 373

SANDWICH CONSTRUCTION
Weight-efficiency analysis of thin-wing construction ... 974

SAUNDERS, HERBERT
Basic methods for nonlinear control-system analysis (D) ... 508

SAVINO, J. M.
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I (D). 899

SCANNING. *See* AUTOMATIC CONTROL, POWER PLANTS—STEAM

SCHARP, C. B.
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines (D) ... 1676

SCHEUBLE, P. A., JR.
Practical equipment-replacement economics ... 799

SCHMIDT, A. O.
Forces and power required to turn aluminum and seven alloys (D) ... 914

SCHMIT, L. A.
Some structural penalties associated with thermal flight ... 990

SCHNEIDER, P. J.
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids (D) ... 1201
Effect of axial fluid conduction on heat transfer in the entrance regions of parallel plates and tubes ... 765
Rate of temperature change of simple shapes (D) ... 1748

SCHNEIDER R. W.
Nonhomogeneous yielding of steel cylinders, I—mild steel (D) ... 1617

SCHNITT, ARTHUR
Optimum stresses of structural elements at elevated temperatures ... 959

SCHRADER, A. R.
Testing dynamically loaded bearings—II, a diesel-engine bearing test machine (D) ... 1266

SCHUMAN, R. H.
Electrohydraulic servomechanism with an ultrahigh-frequency response ... 455

SCHUTRUM, L. F.
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux (D) ... 1556

SCREENS
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes ... 1558

SEALS
Seal leakage in the rotary regenerator and its effect on rotary-regenerator design for gas turbines ... 233

SEBAN, R. A.
Heat transfer to laminar boundary layers with variable free-stream velocity ... 1545
Heat transfer to lead-bismuth in turbulent flow in an annulus ... 1514

SENOO, YASUTOSHI
Investigation of the end-wall boundary layer of a turbine-nozzle cascade (D). 1806

SERVOMECHANISMS. *See also* AUTOMATIC CONTROL
Analysis and design of a servomotor operating on high-pressure compressed gas ... 875
Contributions to hydraulic control—7, analysis of the effects of nonlinearity in a valve-controlled hydraulic drive ... 427
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism ... 513
Design basis for cascade-type positional servomechanisms ... 1873
Dual-mode damper-stabilized servo ... 473
Electrohydraulic servomechanism with an ultrahigh-frequency response ... 455
Hunting due to lost motion ... 577
Nonlinear analog study of a high-pressure pneumatic servomechanism ... 465
Nonlinear integral compensation of a velocity-lag servomechanism with backlash ... 585

SHAFFER, B. W.
Graphical shoe-brake analysis (D) ... 1327

SHANK, M. E.
Flow and fracture of nodular cast iron ... 1911

SHAPIRO, A. H.
On the changing size spectrum of particle clouds undergoing evaporation, combustion, or acceleration ... 775
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (D) ... 1076

SHAW, M. C.
Influence of lead on metal-cutting forces and temperatures ... 1165
Leaded steel and the real area of contact in metal cutting ... 1144
On the drilling of metals, 2—the torque and thrust in drilling ... 139

SHAWKI, G. S. A.
Testing dynamically loaded bearings—I, a short history of bearing test machines (D) ... 1258

SHEARER, J. L.
Electrohydraulic servomechanism with an ultrahigh-frequency response (D) ... 463
Graphical method for the analysis of piecewise linear control systems, with particular application to relay controls (D) ... 850
Nonlinear analog study of a high-pressure pneumatic servomechanism ... 465
Pressure-flow characteristics of pneumatic valves ... 1577
Use of nonlinear valve characteristics in the control of a simple blending process ... 329

SHEN, C. N.
Nonlinear integral compensation of a velocity-lag servomechanism with backlash ... 585

SHEPPARD, R.
First commercial supercritical-pressure steam turbine—built for the Philo Plant ... 417
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines ... 1669

SHERMAN, R. A.
An effort to use a laboratory test as an index of combustion performance (D) ... 1183
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation ... 1727

SHERRARD, E. S.
Representation of nonlinear functions of two input variables on analog equipment (D) ... 499

SHIELDS. *See* POWER PLANTS—NUCLEAR, RADIOACTIVITY

SHIGLEY, J. E.
Curved beams with eccentric boundaries (D) ... 1321

SHINBROT, MARVIN
On the analysis of linear and nonlinear systems ... 547

SHORT, B. E.
Temperature and velocity distribution and transfer of heat in a liquid metal ... 279

SIEGAL, ROBERT
Tests of free convection in a partially enclosed space between two heated vertical plates ... 663

SIMONS, E. L.
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler (D) ... 327

SINCLAIR, G. M.
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A ... 89

SKINNER, S. M.
Electrical effects accompanying the stick-slip phenomenon of sliding of metals on plastics and lubricated surfaces ... 1963

SLATER, J. M.
Measurement and integration of acceleration in inertial navigation ... 1571

SLEICHER, C. A., JR.
Heat transfer in a pipe with turbulent flow and arbitrary wall-temperature distribution ... 789
Temperature and velocity distribution and transfer of heat in a liquid metal (D) ... 285

SLIBAR, A.
On the theory of grease-lubricated thrust bearings ... 1229

SMITH, E. S.
On the analysis of linear and nonlinear systems (D) ... 551

SMITH, J. F. D.
Kinematic analysis and synthesis using collineation-axis equations (D) ... 1312
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (D) ... 1076

SMITH, L. H., JR.
Skewed boundary-layer flow near the end walls of a compressor cascade (D) ... 1799

SMITH, P. A.
Influence of lead on metal-cutting forces and temperatures ... 1143
Leaded steel and the real area of contact in metal cutting ... 1165

SNAPP, R. B.
Testing dynamically loaded bearings
I, a short history of bearing test machines ... 1247
II, a diesel-engine bearing test machine ... 1260

SOHL, G. W.
Electrical effects accompanying the stick-slip phenomenon of sliding of metals on plastics and lubricated surfaces ... 1963

SOHON, HARRY
Two applications of a digital computer to machine-design problems (D) ... 1482

SOLAR ENERGY
Power from solar energy ... 1349
Utilization of solar furnaces in high-temperature research ... 1019

SOLNICK, R. L.
Noise, vibration, and measurement problems, resulting from fluid-flow disturbances ... 1043

SOMERS, W. E.
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler ... 319

SPAHR, J. C.
Eddystone superpressure unit ... 1431

SPARROW, E. M.
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux (D) ... 1556

SPECIFIC HEATS. *See* LIQUIDS, PROPERTIES OF MATERIALS

SPECTROGRAPHIC ANALYSIS
Prevention of destructive engine failure by spectrographic analysis of crankcase oils ... 709

SPENCER, M. M.
Dynamic performance computer for gas-turbine engines ... 1707

SPOONER, M. G.
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism (D) ... 524

SPOTTS, M. F.
Application of complex geometry to relative velocities and accelerations in mechanisms ... 687
Graphical shoe-brake analysis (D) ... 1327
Spring back of metals (D) ... 8

SPRAYS. *See also* NOZZLES
On the changing size spectrum of particle clouds undergoing evaporation, combustion, or acceleration ... 775

SPRING BACK. *See* METAL FORMING

SPROAT, J. R.
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (D) ... 1076

STABILITY. *See also* INDUSTRIAL TRUCKS

STALLARD, D. V.
Nonlinear analog study of a high-pressure pneumatic servomechanism (D) ... 472

STALZER, T. R.
Criteria for validity of lumped-parameter representation of ducting airflow characteristics ... 833

STARKEY, W. L.
Effects of complex stress-time cycles on the fatigue properties of metals ... 1329

STEAM
Flow sampling and discharge measurement in geothermal bores ... 269
New Zealand thermal area and its development for power production ... 255

STEAM SUPERHEATERS
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation ... 307
High-temperature corrosion of alloys exposed in the superheater of an oil-fired boiler ... 319

STEAM TURBINES. *See also* TURBINE TESTING
Eddystone superpressure unit ... 1431
Estimating partial load performance of large reheat turbine-generator units ... 1360
First commercial supercritical-pressure steam turbine—built for Philo Plant ... 417
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines ... 1669

STEEL. *See also* METAL CUTTING
Comparative machinability of B1113—C1213—C1120 HR—C1120 CD and C1119 steels ... 915
Delayed-yield time effects in mild steel under oscillatory axial loads ... 1619
Nonhomogeneous yielding of steel cylinders, 1—mild steel ... 1608

STEEL ALLOYS
Austenitic steels in high-temperature steam piping ... 1398
Creep characteristics of type 347 stainless steel at 1050 and 1100 F in tension and compression ... 1921
Creep damage in a Cr-Mo-V steel as measured by retained stress rupture properties ... 117
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels ... 921
Eight years of experience with austenitic steel piping materials at elevated steam conditions ... 1371
Materials aspect of some high-temperature refinery-piping applications ... 715
Metallurgical considerations of main steam piping for high-temperature, high-pressure service ... 1377

STEELE, M. C.
Nonhomogeneous yielding of steel cylinders, 1—mild steel ... 1608

STERNLICHT, B.
Application of digital computers to bearing design ... 1483
Maximum temperature profile in journal bearings ... 337

STEVENS, R. A.
Mean-temperature difference in one, two, and three-pass crossflow heat exchangers ... 287

STICHA, E. A.
Materials aspect of some high-temperature, refinery-piping applications ... 715

STICK-SLIP. *See* FRICTION

STIRTON, R. I.
Oronite high temperature hydraulic fluids 8200 and 8515 ... 1029

STOUT, T. M.
Basic methods for nonlinear control-system analysis ... 497
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism ... 513
Determination of the characteristics of multi-input and nonlinear systems from normal operating records (D) ... 575
Optimum nonlinear control (D) ... 544

STRESSES AND STRAINS. *See also* BEAMS, METAL TESTING, THERMAL STRESSES
Certain departures from plastic ideality at small strains ... 97
Delayed-yield time effects in mild steel under oscillatory axial loads ... 1619
Effect of complex stress-time cycles on the fatigue properties of metals ... 1329
Effect of internal pressure on flexibility and stress-intensification factors of curved pipe or welding elbows ... 939
Fatigue of metals under combinations of stresses ... 1337
Flow and fracture of nodular cast iron ... 1911
Influence of grinding fluids upon residual stresses in hardened steel ... 149

STRESSES AND STRAINS (*continued*)
Influence of repeated bending loads on biaxial residual stresses in shot-peened plates ... 1904
Nonhomogeneous yielding of steel cylinders, 1—mild steel ... 1608
Optimum stresses of structural elements at elevated temperatures ... 959
Residual stresses in cold extruded aluminum ... 155

STRUCTURES. *See also* AIRPLANE WINGS, AIRPLANES
Safeguard features of a fast-breeder-reactor power plant ... 41

STULEN, F. B.
Fatigue of metals under combinations of stresses (D) ... 1347

SUPERCHARGERS
Design and development of a two-cycle turbocharged diesel engine ... 1929

SUPERCRITICAL PRESSURE. *See* POWER PLANTS—STEAM

SUPERHEATERS. *See* STEAM SUPERHEATERS

SUPERSONIC FLIGHT. *See* THERMAL STRESSES

SUPERSONIC FLOW. *See* NOZZLES

SURFACE FINISH. *See also* METAL FINISHING
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A ... 89

T

TACK, C. E.
Investigation of causes of low wheel-to-rail adhesion and possible methods of improving it (D) ... 386

TAFT, C. K.
Electrohydraulic servomechanism with an ultrahigh-frequency response ... 455

TARASOV, L. P.
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A (D) ... 95

TAYLOR, C. F.
Mass flowmeter for in-flight refueling ... 1039

TAYLOR, CRAIG L.
Description and prediction of human response to aircraft thermal environments ... 1024

TEMPERATURE. *See* HEAT TRANSFER

TEMPERATURE MEASUREMENT. *See* INSTRUMENTS—TEMPERATURE

TEMPLETON, R. E.
Losses in pipe and fittings (D) ... 1782

TESTING. *See also* AIRPLANES, THERMAL STRESSES
Practical application of uncertainty calculations to measured data ... 373

TESTING MACHINES
Delayed-yield time effects in mild steel under oscillatory axial loads ... 1619
Testing dynamically loaded bearings—
I, a short history of bearing test machines ... 1247
II, a diesel-engine bearing test machine ... 1260
Universal bearing tester ... 1267

THERMAL AREAS. *See* STEAM

THERMAL CONDUCTIVITY. *See* HEAT TRANSFER

THERMAL STRESSES
Aircraft structural testing techniques at elevated temperatures ... 1005
Design criteria for heated aircraft structures ... 980
Importance of matching steam temperatures with metal temperatures during starting of large steam turbines ... 1669
Investigation of thermal stress fatigue as related to high-temperature piping flexibility ... 1637
Some NACA research on effect of transient heating on aircraft structures ... 1014
Some structural penalties associated with thermal flight ... 990

THERMODYNAMICS
Applications of an enthalpy-fuel/air ratio diagram to "first law" combustion problems ... 1129
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range ... 681
Design of supersonic expansion nozzles and calculation of isentropic exponent for chemically reacting gases ... 1527
Mollier diagrams for water near bubble point ... 1192

THIELSCHER, H. G.
Plant management and other factors affecting maintenance costs in steam-generating stations (D) 171

THOMPSON, L. D.
Combustion system for spark-fired gas engines using diesel compression ratios. 815

THOMSEN, E. G.
Residual stresses in cold extruded aluminum 155
Some studies of angle relationships in metal cutting 127

THRASHER, L. W.
Practical application of uncertainty calculations to measured data 373

THRELKELD, C. B.
Prevention of destructive engine failure by spectrographic analysis of crankcase oils 709

THRING, M. W.
Heat transfer by radiation from flames—a summary of the work of the International Flame Research Foundation (D) 1740

TIDBALL, R. A.
Heat-transfer rates to crossflowing mercury in a staggered tube bank—I (D).. 907

TILLINGHAST, J. A.
Predicting performance of large steam turbine-generator units for central stations (D) 1113

TITANIUM
Application of a new structural index to compare titanium alloy with other materials in airframe structures 949
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A 89

TONG, L. S.
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes 1558

TORQUE
Design basis for cascade-type positional servomechanisms 1873

TRABANT, E. A.
Mechanical computing device for the analysis of one-dimensional, transient, heat-conduction problems 675

TREADWELL, K. M.
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range 681
Mollier diagrams for water near bubble point (D) 1195

TREFETHEN, LLOYD
Tests of free convection in a partially enclosed space between two heated vertical plates (D) 672

TRIBUS, M.
Dynamic performance computer for gas-turbine engines 1707
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux (D) 1556
Heat transfer in a pipe with turbulent flow and arbitrary wall-temperature distribution 789
On the changing size spectrum of particle clouds undergoing evaporation, combustion, or acceleration (D) 786
Theoretical analysis of heat transfer in natural convection and in boiling (D).. 1510

TRINKS, W.
Design of corrugated diaphragms (D) 62

TROCKI, T.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (D) 1083

TRUCKS. *See* INDUSTRIAL TRUCKS

TSAI, D. H.
Pressure-flow characteristics of pneumatic valves (D) 1589

TURBINE TESTING
Instrumentation for steam-consumption tests on medium steam turbine-generator sets 357
Procedures for testing large steam turbine-generators in central stations 365

TURBINES. *See also* NOZZLES, STEAM TURBINES
Drag-turbine performance 1291

TURBOMACHINERY
Experimental arrangement for the measurement of the pressure distribution on high-speed rotating blade rows 617

TURNER, J. R.
Investigation of the end-wall boundary layer of a turbine-nozzle cascade 1801

TURNING. *See* METAL CUTTING

U

ULTRAFINISHING. *See* METAL FINISHING

V

VALLESE, L. M.
Résumé of the development and literature of nonlinear control-system theory (D) 452

VALVES
Cavitation characteristics of gate valves and globe valves used as flow regulators under heads up to about 125 feet.. 1275
Compensation of steady-state flow forces in spool-type hydraulic valves 1784
Contributions to hydraulic control—7, analysis of the effects of nonlinearity in a valve-controlled hydraulic drive.. 427
Pressure-flow characteristics of pneumatic valves 1577
Resistance coefficients for laminar and turbulent flow through one-half-inch valves and fittings 1759
Use of nonlinear valve characteristics in the control of a simple blending process 329

VAN DUZER, R. M., JR.
Information center with automatic logger and scanner—Neches Power Station, Gulf States Utilities Company (D) 1661
Plant management and other factors affecting maintenance costs in steam-generating stations (D) 171

VANES. *See* DUST COLLECTORS

VAN HAUTE, ANDRÉ
Mollier diagrams for water near bubble point 1192

VAN HENGEL, G. H.
Effect of condensate reheat on mean temperature difference in feedwater heater subcooling zones (D) 1499

VASU, GEORGE
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals 481

VAUGHAN, A. L.
Operating considerations in application of gas-turbine-driven, centrifugal, pipeline compressors 721

VIBRATION. *See also* METAL TESTING
Noise, vibration, and measurement problems, resulting from fluid-flow disturbances 1043
Nonlinear phenomena 439
Vibration design charts 1459

VICKERS, P. T.
Heat-transfer and flow-friction characteristics of woven-screen and crossed-rod matrixes (D) 1570

VIDOSIC, J. P.
Curved beams with eccentric boundaries. 1317
Kinematic analysis and synthesis using collineation-axis equations (D) 1312

VISCOSITY
Jet-pump theory and performance with fluids of high viscosity 1807

VON DER NUELL, W. T.
Drag-turbine performance (D) 1302

VORTEXES. *See* FLOW OF FLUIDS

W

WAGNER, W. S.
Residual stresses in cold extruded aluminum (D) 159

WAHL, A. M.
Recent research on flat diaphragms and circular plates with particular reference to instrument applications 83

WALES, E. W.
Fluid flow through two orifices in series. III—the parameters of metastable and stable flow of hot water 183

WALKER, A. B.
Experimental investigation of critical design factors for vane-type cyclones.. 1715

WALSH, B. R.
Universal bearing tester 1267

WARD, J. E.
Dual-mode damper-stabilized servo 473

WARREN, G. B.
Engineering the Eddystone plant for 5000-lb 1200-deg steam (D) 1429

WATER
Mollier diagrams for water near bubble point 1192

WATER COOLING. *See* COOLING TOWERS

WATSON, C. W.
Maintenance factors affecting production costs 173

WAVE MECHANICS
On the dynamics of pneumatic transmission lines 853

WEAR
Prevention of destructive engine failure by spectrographic analysis of crankcase oils 709
Statistical analysis of a wear process 1242

WEBER, ERNST
Résumé of the development and literature of nonlinear control-system theory (D) 452

WEHE, R. L.
Properties of misaligned journal bearings 1205

WEIDLER, S. E.
Application of digital computers to bearing design (D) 1492
Spring-supported thrust bearing (D) 353

WEINIG, F. S.
Skewed boundary-layer flow near the end walls of a compressor cascade (D). 1799

WEISMANTLE, A. R.
First commercial supercritical-pressure steam generator for Philo Plant (D).... 416

WELDING
Austenitic steels in high-temperature steam piping 1398
Eight years of experience with austenitic steel piping materials at elevated steam conditions 1371

WELCH, WILLIAM, JR.
Information center with automatic logger and scanner—Neches Power Station, Gulf States Utilities Company (D) 1661

WELSH, W. E.
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux 1551

WEST, G. L., JR.
Mollier diagrams for water near bubble point (D) 1192

WEST, J. C.
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism (D) 524

WESTCOTT, J. C.
Procedures for testing large steam turbine-generators in central stations 365

WHEATER, R. I.
An effort to use a laboratory test as an index of combustion performance 1177

WHEELS. *See* ADHESION (RAIL)

WHELAN, T. J.
Predicting performance of large steam turbine-generator units for central stations (D) 1113

WHELCHEL, C. C.
First commercial supercritical-pressure steam-electric generating unit for Philo Plant (D) 407

WILCOX, W. W.
Problems encountered in the translation of compressor performance from one gas to another 887

WILDER, A. B.
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) 1396

WILDHACK, W. A.
Investigations of the properties of corrugated diaphragms 65

WILDMANN, M.
Fluid dynamic theory of gas-lubricated bearings (D) 1224

WILHOIT, J. C., JR.
Apparent frictional forces on clamping elements as used in the oil industry.... 1627

WILLA, J. L.
Instrumenting a field study of industrial water-cooling tower performance 1679

WILSON, C. D.
First commercial supercritical-pressure steam turbine—built for the Philo Plant (D) 426

WILSON, R. L.
Investigation of causes of low wheel-to-rail adhesion and possible methods of improving it (D) 386

WILSON, W. A.
Analytic procedure for optimizing the selection of power-plant components.. 1120

WINTER, I. A.
Integration of steam and hydro power in Northern California (D) 438
WISEMAN, J. P.
Cooling towers for steam-electric stations —selection and performance experiences (D) 1696
WOLKO, H. S.
Optimum stresses of structural elements at elevated temperatures 959
WOOD, HOMER
Drag-turbine performance (D) 1302
WOOD, L. E.
Investigations of the properties of corrugated diaphragms (D) 81
WOOD INDUSTRIES
How RF concerns the wood industry 603
WOOLF, J. R.
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids (D) ... 1202
WOOLF (*continued*)
Mean-temperature difference in one, two, and three-pass crossflow heat exchangers 287
WYLIE, R. D.
Eight years of experience with austenitic steel piping materials at elevated steam conditions (D) 1376
Metallurgical considerations of main steam piping for high-temperature, high-pressure service (D) 1397

Y

YANG, C. T.
Residual stresses in cold extruded aluminum (D) 159
YELLOTT, J. I.
Power from solar energy 1349
YIELD STRENGTH. *See* STRESSES AND STRAINS
YOSHIDA, R. Y.
Pressure-flow characteristics of pneumatic valves (D) 1589

Z

ZERBE, J. E.
Pressure drop for parallel flow through rod bundles 1751
ZUBER, NOVAK
Experimental studies of free convection heat transfer in a vertical tube with uniform wall heat flux (D) 1556
Theoretical analysis of heat transfer in natural convection and in boiling (D) .. 1510

Index to Journal of Applied Mechanics

Volume 24, 1957

The JOURNAL OF APPLIED MECHANICS includes papers contributed to the Transactions of the ASME by the Applied Mechanics Division of the ASME. The JOURNAL OF APPLIED MECHANICS for 1957 was issued quarterly in March, June, September, and December.

(AC) denotes author's closure; (BR) book reviews; (D) discussion of a paper.

A

ABRAMSON, H. NORMAN
Study of the propagation of flexural waves in elastic beams 431

ACCELEROMETERS
Effect of spring mass on contact-accelerometer responses (D) 321

ADHESIVES. *See also* CEMENTED JOINTS

AERODYNAMICS
Aerodynamic components of aircraft at high speeds (BR) 651
New approach to the theory of thin, slightly cambered profiles 177
Proceedings of the conference on high-speed aeronautics (BR) 164

AIRPLANES
Aeroelasticity (BR) 326
Fatigue in aircraft structures (BR) 653
Stresses in aircraft and shell structures (BR) 490

ALGER, P. L.
Vibration modes of statòrs of induction motors (D) 633

APPLIED MECHANICS
American civil engineering practice, Volume III (BR) 655
Forced lateral oscillations of trailers 515

ATKINSON, C. P.
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer 520

ATOMIC ENERGY
Physics and mathematics. Series I of Progress in nuclear energy (BR) 325

ATSUMI, A.
Stress concentrations in a strip under tension and containing two pairs of semicircular notches placed on the edges symmetrically 565

AVIATION
High speed flight (BR) 655

B

BAILEY, FRED C.
Cams—design, dynamics, accuracy (BR) 328

BAILEY, J. J.
Type of flame-excited oscillation in a tube 333

BARBER, A. D.
Dynamic response of beams and plates to rapid heating 413

BAREISS, R. A.
Failure of machine parts (BR) 655

BARNHART, K. E., JR.
Stresses in beams during transverse impact 440

BARON, M. L.
Response of nonlinearly supported spherical boundaries to shock waves 501

BARS
Displacements in a wide curved bar subjected to pure elastic-plastic bending .. 447

BARTON, M. V.
Response of mechanical systems to random excitation 248

BEAMS
Analog computer for nonlinear system with hysteresis 245
Beams of uniform strength subjected to uniformly distributed loading 105
Collapse strength of redundant beams after lateral buckling 283
Dynamic response of beams and plates to rapid heating 413
Interaction curves for shear and bending of plastic beams 453

JOURNAL OF APPLIED MECHANICS

March	1–164
June	165–328
September	329–492
December	493–656

BEAMS (*continued*)
Mathematical analysis of bow girders of any shape (D) 489
Numerical procedure for calculating the large deflections of straight and curved beams 289
On the antisymmetric vibrations of a beam carrying a distributed added mass 312
On the use of sine transforms in Timoshenko-beam impact problems 152
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact 509
Pretwisted beams and columns (D) 162
Response of beams and plates to random loads 46
Specific damping energy of fixed-fixed beam specimens 426
Stresses in beams during transverse impact 440
Structural damping of a simple built-up beam with riveted joints in bending ... 35
Study of the propagation of flexural waves in elastic beams 431

BEARINGS
Effect of lubricant inertia in journal-bearing lubrication 494
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (D) 158

BETSER, A. A.
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact 509

BIOT, M. A.
Elastic coefficients of the theory of consolidation 594

BLADES. *See* COMPRESSORS

BLOCKS. *See* DIES

BODNER, S. R.
Elementare Schalenstatik (BR) 656
General instability of a ring-stiffened, circular cylindrical shell under hydrostatic pressure 269

BOLEY, B. A.
Dynamic response of beams and plates to rapid heating 413
On the use of sine transforms in Timoshenko-beam impact problems 152

BOOK REVIEWS
Aerodynamic components of aircraft at high speeds 651
Aeroelasticity 326
American civil engineering practice, Volume III 655
Analysis of structures 647
Cams—design, dynamics, accuracy 328
Creep and fracture of metals at high temperature 492
Defects and failures of metals 656
Dynamics of machinery 650
Elasticity, fracture, and flow with engineering and geological applications 650
Elementare Schalenstatik 656
Elements of gasdynamics 650
Engineering mechanics 163
Failure of machine parts 655
Fatigue in aircraft structures 653
50 Jahr Grenzschichtforschung 163

BOOK REVIEWS (*continued*)
Foundations of the nonlinear theory of elasticity 328
Fundamentals of vibration analysis 490
Gas dynamics 642
High speed flight 655
"Journal of Fluid Mechanics," new British magazine 325
Mechanical vibrations 326
Momentum transfer in fluids 654
Physics and mathematics. Series I of Progress in nuclear energy 325
Plastic method of structural analysis 648
Practical solutions of torsional vibration problems 653
Principles of turbomachinery 327
Proceedings of the conference on high-speed aeronautics 164
Proceedings of the Fourth Midwestern Conference on Fluid Mechanics 327
Progress in nuclear energy. Series II—Reactors 653
Properties of combustion gases—system C_nH_m-air. Volume I, Thermodynamic properties. Volume II, Chemical composition of equilibrium mixtures 491
Science of engineering materials 655
Statische und dynamische Berechnung erdverankerter Hängebrücken mit Hilfe von Greenschen Funktionen und Integralgleichungen 164
Stresses in aircraft and shell structures ... 490
Structure of turbulent shear flow 649
Tables of thermal properties of gases 325
Theory and practice of lubrication for engineers 651
Thermodynamics and statistical mechanics 647
Thermodynamics and statistical mechanics 654

BORN, J. S.
Some mixed boundary-value problems of the semi-infinite strip 261

BOUNDARY LAYER. *See also* FLOW OF FLUIDS
50 Jahr Grenzschichtforschung (BR) 163

BOYD, JOHN
Theory and practice of lubrication for engineers (BR) 651

BRIDGES
Statische und dynamische Berechnung erdverankerter Hängebrücken mit Hilfe von Greenschen Funktionen und Integralgleichungen (BR) 164

BUCKLING
Buckling of initially imperfect cylindrical shells subject to torsion ..... 125, (D) 632
Buckling of rectangular plates with two unsupported edges 537
Buckling of thin cylindrical shell under hoop stresses varying in axial direction 405
Collapse strength of redundant beams after lateral buckling 283
Donnell type theory for asymmetrical bending and buckling of thin conical shells 547
General instability of a ring-stiffened, circular cylindrical shell under hydrostatic pressure 269
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate 531

BUDIANSKY, BERNARD
New method of analyzing stresses and strains in work-hardening plastic solids (D) 481

C

CABLES
Motion and stress of an elastic cable due to impact 417

CABLES (*continued*)
Some effects of vortex formation in the wake of a suspended cylindrical cable (D) ... 485

CALENDERING. *See* ROLLING

CAMS
Cams—design, dynamics, accuracy (BR) 328

CAVITATION
Photoelastic study of strain waves caused by cavitation ... 340

CEMENTED JOINTS
Theory of adhesive scarf joints ... 255, (D) 644

CHAPMAN, D. R.
Theory for base pressures in transonic and supersonic flow (D) ... 484

CHATTARJI, P. P.
Note on torsion of circular shafts of variable diameter ... 477

CHOU, Y. T.
Effect of lubricant inertia in journal-bearing lubrication ... 494

CHU, HU-NAN
Rational analysis of heat-exchanger tube-sheet stresses (D) ... 315

CLARK, J. W.
Specific damping energy of fixed-fixed beam specimens ... 426

CLARKE, JOSEPH H.
Aerodynamic components of aircraft at high speeds (BR) ... 651

COHEN, HIRSH
Two-dimensional, steady, cavity flow about slender bodies in channels of finite breadth ... 170

COLUMNS
Pretwisted beams and columns (D) ... 162

COMBUSTION
Properties of combustion gases—system C_nH_{2n}-air. Volume I, Thermodynamic properties. Volume II, Chemical composition of equilibrium mixtures (BR) 491
Type of flame-excited oscillation in a tube ... 333

COMINGS, E. W.
Momentum diffusion from a slot jet into a moving secondary (D) ... 321

COMPRESSIBILITY. *See* SPHERES

COMPRESSORS
Two-dimensional inflow conditions for a supersonic compressor with curved blades ... 165

COMPUTERS
Analog computer for nonlinear system with hysteresis ... 245
Method for solving problems of irrotational gas flow by means of high-speed digital computers ... 497
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer ... 520

CONSOLIDATION. *See* SOIL MECHANICS

CONTACT. *See* ELASTICITY

CONWAY, H. D.
Note on Way's large-deflection solution for the uniformly loaded and clamped circular plate ... 151
Numerical procedure for calculating the large deflections of straight and curved beams ... 289

COOPER, R. M.
Cylindrical shells under line load ... 553

CORNELL, W. G.
Theoretical analysis of viscous flow in narrowly spaced radial diffuser (D) ... 644

CORRSIN, STANLEY
Structure of turbulent shear flow (BR) ... 649

CRACKS. *See* STRESSES AND STRAINS

CRANDALL, S. H.
Improvement of the Holzer table based on a suggestion of Rayleigh's ... 228
Negative group velocities in continuous structures ... 622

CREECH, M. D.
Mobility of levers having uniformly distributed mass ... 475

CREEP OF MATERIALS
Analysis of creep in rotating disks based on the Tresca criterion and associated flow rule (D) ... 155
Creep of thick tubes under internal pressure ... 464

CURTIS, C. W.
Longitudinal impact of a semi-infinite circular elastic bar (D) ... 635

CUTCLIFFE, J. L.
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate ... 531

CYCLONES. *See* DUST SEPARATORS

CYLINDERS. *See* SHELLS

D

DAMPING. *See* VIBRATION

DEFORMATION
Deformation of elastic paraboloidal shells of revolution ... 397
Finite twisting and bending of thin rectangular elastic plates ... 381
Thermal stress and deformation ... 467

DERESIEWICZ, H.
Dependence of frequency spectrum of a circular disk on Poisson's ratio (D) ... 641
Oblique contact of nonspherical elastic bodies ... 623

DESIGN DATA AND METHODS
Axisymmetrical bending of circular plates under simultaneous action of lateral load, force in the middle plane, and elastic foundation ... 141
Design charts for symmetrical ring girders 144
Effect of elastic racks on vibration mounting of equipment ... 617
Ideal reducers and nozzle flares ... 137
Stress distributions in rotating disks subjected to creep at elevated temperature 299
Thermal stress and deformation ... 467
Uniformly loaded circular plates with a central hole and both edges supported ... 306

DE SILVA, C. NEVIN
Deformation of elastic paraboloidal shells of revolution ... 397

DEVERALL, L. I.
Solution of some problems in bending of thin clamped plates by means of the method of Muskhelishvili ... 295

DIES
On the plane plastic flow of an inset block 457

DIETZ, A. G. H.
Theory of adhesive scarf joints (D) ... 644

DIFFERENTIAL ANALYZERS. *See* COMPUTERS

DIFFUSERS
Effect of adverse pressure gradients on turbulent boundary layers in axisymmetric conduits ... 191

DIFFUSION. *See* FLOW OF FLUIDS

DISKS. *See also* ROTORS
Dependence of the frequency spectrum of a circular disk on Poisson's ratio ... 53, (D) 641
Thermal stresses in infinite elastic disks (D) ... 487

DI TARANTO, R. A.
Effect of elastic racks on vibration mounting of equipment ... 617

DONNELL'S EQUATIONS. *See* MATHEMATICS

DORN, J. E.
Effect of stress on creep at high temperatures ... 207, 644

DRUCKER, D. C.
American civil engineering practice, Volume III (BR) ... 655
Stresses and displacements in an elastic-plastic wedge (D) ... 631

DUFFING'S EQUATION. *See* MATHEMATICS

DUFFY, J.
Stress-strain relations and vibrations of a granular medium ... 585

DUNCAN, J. P.
Rational analysis of heat-exchanger tube-sheet stresses (D) ... 317

DUNN, M. B.
Stiffness of curved circular tubes with internal pressure (AC) ... 154

DURELLI, A. J.
Experiments for the determination of transient stress and strain distributions in two-dimensional problems ... 69
Stress solutions for an infinite plate with triangular inlay (D) ... 324

DUST SEPARATORS
Head loss in flow through a cyclone dust separator or vortex chamber ... 16, (D) 642

DYNAMICS. *See* GASES, MACHINERY

E

ECKERT, E. R. G.
New method to measure Prandtl number and thermal conductivity of fluids ... 25, 631
Tables of thermal properties of gases (BR) ... 325

EIGENVALUES. *See* MATHEMATICS

ELASTICITY. *See also* PLASTICITY, STRESSES AND STRAINS, THERMAL STRESSES
Calendering of a viscoelastic material ... 602
Dislocation over a bounded plane area in an infinite solid ... 252
Effect of elastic racks on vibration mounting of equipment ... 617
Elastic coefficients of the theory of consolidation ... 594
Elasticity, fracture, and flow with engineering and geological applications (BR) ... 650
Foundations of the nonlinear theory of elasticity (BR) ... 328
Longitudinal impact of a semi-infinite circular elastic bar ... 59, (D) 635
Mixed boundary-value problem of elasticity with parabolic boundary ... 122
Oblique contact of nonspherical elastic bodies ... 623
Photothermoelasticity: an exploratory study ... 355

ELECTRIC ANALOGY
Simple procedure for improved accuracy in the resistor-network solution of Laplace's and Poisson's equation ... 93, (D) 639
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer ... 520

ELECTRIC MOTORS
Vibration modes of stators of induction motors ... 39, (D) 633

ENGINEERING
American civil engineering practice, Volume III (BR) ... 655

ENGINEERING PUBLICATIONS
"Journal of Fluid Mechanics," new British magazine (BR) ... 325

ERDELYI, E.
Vibration modes of stators of induction motors ... 39

ERINGEN, A. C.
Response of beams and plates to random loads ... 46

EVAN-IWANOWSKI, R. M.
Stress solution for an infinite plate with triangular inlay (AC) ... 324

F

FATIGUE OF MATERIALS. *See* METAL FATIGUE

FATT, I.
Compressibility of a sphere pack—comparison of theory and experiment ... 148

FAY, JAMES A.
Thermodynamics and statistical mechanics (BR) ... 654

FINDLEY, W. N.
Fatigue in aircraft structures (BR) ... 653

FINZI, LEO
On the principle of Haar and von Karman in statically determinate problems of plasticity ... 461

FISHER, G. P.
Design charts for symmetrical ring girders ... 144

FLAMES. *See* COMBUSTION

FLOW OF FLUIDS. *See also* AERODYNAMICS, COMPRESSORS, FLUID DYNAMICS
Effect of adverse pressure gradients on turbulent boundary layers in axisymmetric conduits ... 191
Head loss in flow through a cyclone dust separator or vortex chamber ... 16, (D) 642
Method for solving problems of irrotational gas flow by means of high-speed digital computers ... 497
Momentum diffusion from a slot jet into a moving secondary (D) ... 321
New method to measure Prandtl number and thermal conductivity of fluids ... 25, (D) 631
Point source and point vortex on the hodograph plane ... 183
Some effects of vortex formation in the wake of a suspended cylindrical cable (D) ... 485
Structure of turbulent shear flow (BR) ... 649
Suction device using air under pressure (D) ... 156
Theoretical analysis of the viscous flow in a narrowly spaced radial diffuser ... 9, (D) 644
Theory for base pressures in transonic and supersonic flow (D) ... 484
Turbulence in small air jets at exit velocities up to 705 feet per second ... 349

FLOW OF FLUIDS (*continued*)
Two-dimensional, steady, cavity flow about slender bodies in channels of finite breadth ... 170
Unsteady flow of gas through a semi-infinite porous medium ... 329
Velocity, temperature, and heat-transfer measurements in a turbulent boundary layer downstream of a stepwise discontinuity in wall temperature ... 2, (D) 488

FLUID DYNAMICS
Momentum transfer in fluids (BR) ... 654

FLUID MECHANICS
"Journal of Fluid Mechanics," new British magazine (BR) ... 325
Proceedings of the Fourth Midwestern Conference on Fluid Mechanics (BR) ... 327

FORSCHER, F.
Theory of yield point and transition temperature of mild steel (AC) ... 156

FORSTALL, W.
Momentum diffusion from a slot jet into a moving secondary (AC) ... 322

FRACTURE. *See* ELASTICITY, STRESSES AND STRAINS

FRASIER, J. T.
Force in the plane of two joined semi-infinite plates ... 582

FRIEBERGER, WALTER
Minimum weight design of cylindrical shells (AC) ... 486

FREUDENSTEIN, F.
Five-line construction for a computing linkage satisfying five precision requirements ... 621

FROCHT, M. M.
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact ... 509

G

GARDNER, K. A.
Rational analysis of heat-exchanger tube-sheet stresses [D] ... 316

GARLAND, CLYNE F.
Mechanical vibrations (BR) ... 326

GASES. *See also* FLOW OF FLUIDS
Elements of gasdynamics (BR) ... 650
Gas dynamics (BR) ... 642
Properties of combustion gases—system C_nH_m-air. Volume I, Thermodynamic properties. Volume II, Chemical composition of equilibrium mixtures (BR) ... 491
Table of thermal properties of gases (BR) 325

GAYDON, F. A.
Yield loads of slabs with reinforced cut-outs (D) ... 634

GAZIS, D. C.
Influence of width on velocities of long waves in plates ... 541

GEORGE, H. H.
Stiffness of curved circular tubes with internal pressure (D) ... 153

GEORGIAN, J. C.
Uniformly loaded circular plates with a central hole and both edges supported. 306

GERARD, GEORGE
Photothermoelasticity: an exploratory study ... 355

GERMAIN, P.
Elements of gasdynamics (BR) ... 650

GILBERT, A. C.
Photothermoelasticity: an exploratory study ... 355

GILBERT, ROBERT
Two-dimensional, steady, cavity flow about slender bodies in channels of finite breadth ... 170

GIRDERS. *See* STRUCTURES

GOLDSMITH, WERNER
Elongating string under the action of a transverse force ... 609
Stresses in beams during transverse impact ... 440

GOODIER, J. N.
Thermal stress and deformation ... 467

GOODMAN, LAWRENCE E.
Fundamentals of vibration analysis (BR) 490
Thermal drift of floated gyroscopes ... 506

GRANULAR MEDIA. *See* SPHERES

GRAPHICAL METHODS
Force in the plane of two joined semi-infinite plates ... 582
Graphical solution of single-degree-of-freedom vibration problem with arbitrary damping and restoring forces ... 311

GRAPHICAL METHODS (*continued*)
Improved nomogram for the ratios of the octahedral to the maximum shearing stresses (D) ... 160
Min-max solutions for the linear mass-spring system ... 131
New method for the construction of Hencky-Prandtl nets ... 81

GROSS, W. A.
Beams of uniform strength subjected to uniformly distributed loading ... 105

GRUBIN, CARL
On the theory of the acceleration damper (AC) ... 324

GURLAND, J.
Science of engineering materials (BR) ... 655

GYROSCOPES
Thermal drift of floated gyroscopes ... 506

H

HAGEL, W. C.
Specific damping energy of fixed-fixed beam specimens ... 426

HAGG, A. C.
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (AC) ... 159

HANDELMAN, GEORGE
On the antisymmetric vibrations of a beam carrying a distributed added mass ... 312

HANSON, K. L.
The sector problem ... 574

HART, E. W.
Theory of yield point and transition temperature of mild steel (D) ... 155

HARTNETT, J. P.
Velocity, temperature, and heat-transfer measurements in a turbulent boundary layer downstream of a stepwise discontinuity in wall temperature (D) ... 488

HAWTHORNE, WILLIAM R.
50 Jahr Grenzschichtforschung (BR) ... 163
Proceedings of the conference on high-speed aeronautics (BR) ... 164

HEAD, A. K.
Propagation of fatigue cracks (AC) ... 161

HEAPS, H. S.
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate 531

HEAT-EXCHANGE EQUIPMENT
Axisymmetrical bending of circular plates under simultaneous action of lateral load, force in the middle plane, and elastic foundation ... 141
Rational analysis of heat-exchanger tube-sheet stresses (D) ... 315

HEAT TRANSFER
New method to measure Prandtl number and thermal conductivity of fluids ... 25, (D) 631
Velocity, temperature, and heat-transfer measurements in a turbulent boundary layer downstream of a stepwise discontinuity in wall temperature ... 2, (D) 488

HIJAB, W. A.
Statistical appraisal of the Prot method for determination of fatigue endurance limit ... 214

HIRSCHHORN, J.
Synthesis of four-bar mechanisms by the method of components ... 22, 639

HODGE, P. G., JR.
Analysis of creep in rotating disks based on the Tresca criterion and associated flow rule (D) ... 155
Interaction curves for shear and bending of plastic beams ... 453
Minimum weight design of cylindrical shells (D) ... 486
New method of analyzing stresses and strains in work-hardening plastic solids (D) ... 482
Yield loads of slabs with reinforced cut-outs ... 85, 634

HOFF, N. J.
Buckling of thin cylindrical shell under hoop stresses varying in axial direction 405
Stresses in aircraft and shell structures (BR) ... 490

HOLL, J. W.
Effect of adverse pressure gradients on turbulent boundary layers in axisymmetric conduits ... 191

HOLZER TABLE. *See* MATHEMATICS

HONORS AND AWARDS
Timoshenko Medal ... 493

HOPFMANN, W. H., II
Nodal patterns of the free flexural vibrations of stiffened plates ... 526

HORVAY, G.
Saint Venant's principle: a biharmonic eigenvalue problem ... 381
The sector problem ... 574
Some mixed boundary-value problems of the semi-infinite strip ... 261
Vibration modes of stators of induction motors ... 39

HOUSE, RAYMOND N., JR.
Displacements in a wide curved bar subjected to pure elastic-plastic bending ... 447

HUBBERT, M. K.
Longitudinal impact of a semi-infinite circular elastic bar (D) ... 635

HUTH, J. H.
Some new data on high-speed impact phenomena ... 65

HYDROSTATIC TESTING
General instability of a ring-stiffened, circular cylindrical shell under hydrostatic pressure ... 269

HYSTERESIS. *See* NONLINEAR SYSTEMS

I

IMPACT
Experiments for the determination of transient stress and strain distributions in two-dimensional problems ... 69
Longitudinal impact of a semi-infinite circular elastic bar ... 59, (D) 635
Motion and stress of an elastic cable due to impact ... 417
On the use of sine transforms in Timoshenko-beam impact problems ... 152
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact 509
Some new data on high-speed impact phenomena ... 65
Stresses in beams during transverse impact ... 440
Study of the propagation of flexural waves in elastic beams ... 431

INSTRUMENTS. *See* FLOW OF FLUIDS, HEAT TRANSFER

INSTRUMENTS—VISCOSITY. *See* VISCOMETERS

IRVINE, T. F., JR.
New method to measure Prandtl number and thermal conductivity of fluids ... 25, (D) 631

IRWIN, G. R.
Analysis of stresses and strains near the end of a crack traversing a plate ... 361

J

JETS. *See* FLOW OF FLUIDS

JOHNSON, D. S.
Velocity, temperature, and heat-transfer measurements in a turbulent boundary layer downstream of a stepwise discontinuity in wall temperature ... 2, 489

JOHNSTON, BRUCE G.
Plastic method of structural analysis (BR) ... 648

K

KAFKA, P. G.
Stiffness of curved circular tubes with internal pressure (AC) ... 154

KANE, T. R.
Reflection of dilatational waves at the edge of a plate ... 219

KANO, CYRUS H.
Practical solutions of torsional vibration problems (BR) ... 653

KAYE, JOSEPH
Properties of combustion gases—system C_nH_m-air. Volume I, Thermodynamic properties. Volume II, Chemical composition of equilibrium mixtures (BR). 491

KEENAN, J. H.
Head loss in flow through a cyclone dust separator or vortex chamber ... 16, 643
The state principle—some general aspects of relationships among properties of systems (D) ... 625

KENNARD, E. H.
Vibrations of cylindrical shells with rotatory inertia and shear (D) 162

KESTIN, J.
Corrections for the oscillating-disk viscometer 197, 643
New method to measure Prandtl number and thermal conductivity of fluids (D) 631
The state principle—some general aspects of relationships among properties of systems (D) 626
Thermodynamics and statistical mechanics (BR) 647

KEYES, F. G.
Corrections for the oscillating-disk viscometer (D) 643

KIDDER, R. E.
Unsteady flow of gas through a semi-infinite porous medium 329

KIKUCHI, S.
Stress-concentration factors in shafts ... 313

KINEMATICS
Five-line construction for a computing linkage satisfying five precision requirements 621
Synthesis of four-bar mechanisms by the method of components ..... 22, (D) 637

KLINE, L. V.
Nonuniform rim-stress conditions for a rotating solid of uniform stress 149

KLINE, S. J.
The state principle—some general aspects of the relationships among the properties of systems 29, 628

KOENIG, F. O.
The state principle—some general aspects of the relationships among the properties of systems 29, 628

KOGA, TOYOKI
Method for solving problems of irrotational gas flow by means of high-speed digital computers 497

KOITER, W. T.
Thermal stresses in infinite elastic disks (D) 487

KORST, H. H.
Theory for base pressures in transonic and supersonic flow (AC) 484

KYLE, P. E.
Defects and failures of metals (BR) 656

KYRALA, A. ALI
Foundations of the nonlinear theory of elasticity (BR) 328
Physics and mathematics. Series I of Progress in nuclear energy (BR) 325
Statische und dynamische Berechnung erdverankerter Hängebrücken mit Hilfe von Greenschen Funktionen und Integralgleichungen (BR) 164

L

LAKS, H.
Effect of stress on creep at high temperatures 207, 644

LANDAU, H. G.
Simple procedure for improved accuracy in the resistor-network solution of Laplace's and Poisson's equation 93, 640

LANDIS, FRED
Head loss in flow through a cyclone dust separator or vortex chamber (D) 642
Momentum diffusion from a slot jet into a moving secondary (D) 321

LASSITER, L. W.
Turbulence in small air jets at exit velocities up to 705 feet per second 349

LEE, E. H.
Dynamics of machinery (BR) 650

LESSELLS, JOHN M.
Biography 1

LEVERS. *See* MECHANICS

LEVINE, PHILIP
Two-dimensional inflow conditions for a supersonic compressor with curved blades 165

LEVY, SALOMON
Progress in nuclear energy. Series II—Reactors (BR) 653

LI, J. P.
Beams of uniform strength subjected to uniformly distributed loading 105

LIBBY, PAUL A.
Aeroelasticity (BR) 326

LIN, C. C.
"Journal of Fluid Mechanics," new British magazine (BR) 325

LIN, T. C.
Vibration of cylindrical shells with rotatory inertia and shear (AC) 162

LIN, T. H.
Effect of spring mass on contact-accelerometer responses (AC) 321

LING, CHIH-BING
Stresses in a perforated strip 365

LINKAGES. *See* KINEMATICS, MECHANISMS

LOO, T. T.
Buckling of initially imperfect cylindrical shells subject to torsion (D) 632

LUBKIN, J. L.
Theory of adhesive scarf joints 255

LUBRICATION
Effect of lubricant inertia in journal-bearing lubrication 494
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (D) 158
Theory and practice of lubrication for engineers (BR) 651

LUNCHICK, M. E.
Behavior of cylinders with initial shell deflection 559

M

MCCLINTOCK, F. A.
Propagation of fatigue cracks (D) 160

MCDOWELL, E. L.
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness 376

MACHINERY
Dynamics of machinery (BR) 650
Failure of machine parts (BR) 655

MAGER, ARTUR
Theoretical analysis of viscous flow in narrowly spaced radial diffuser (D) 644

MAGNESS, L. S.
Nodal patterns of the free flexural vibrations of stiffened plates 526

MAGNETISM
Specific damping energy of fixed-fixed beam specimens 426

MAHALINGAM, S.
Forced vibration of systems with nonlinear, nonsymmetrical characteristics. 435

MALKIN, I.
Rational analysis of heat-exchanger tube-sheet stresses (D) 316

MANJOINE, M. J.
Creep and fracture of metals at high temperature (BR) 492

MASUR, E. F.
Collapse strength of redundant beams after lateral buckling 283

MATHEMATICS. *See also* ELECTRIC ANALOGY
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness 376
Direct method for determining Airy polynomial stress functions 387
Dislocation over a bounded plane area in an infinite solid 252
Donnell type theory for asymmetrical bending and buckling of thin conical shells 547
Elongating string under the action of a transverse force 609
Finite twisting and bending of thin rectangular elastic plates 381
Improvement of the Holzer table based on a suggestion of Rayleigh's 228
Longitudinal impact of a semi-infinite circular elastic bar ..... 59, (D) 635
Min-max solutions for the linear mass-spring system 131
Mixed boundary-value problem of elasticity with parabolic boundary 122
New approach to the theory of thin, slightly cambered profiles 177
Note on Way's large-deflection solution for the uniformly loaded and clamped circular plate 151
Numerical procedure for calculating the large deflections of straight and curved beams 289
On the use of sine transforms in Timoshenko-beam impact problems 152
Point source and point vortex in the hodograph plane 183
Response of nonlinearly supported boundaries to shock waves 501
Saint Venant's principle: a biharmonic eigenvalue problem 381
The sector problem 574
Solution of some problems in bending of thin clamped plates by means of the method of Muskhelishvili 295

MATHEMATICS (*continued*)
Statische und dynamische Berechnung erdverankerter Hängebrücken mit Hilfe von Greenschen Funktionen und Integralgleichungen (BR) 164
Stress concentrations in a strip under tension and containing two pairs of semicircular notches placed on the edges symmetrically 565
Stresses in a perforated strip 365
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer 520
Unsteady flow of gas through a semi-infinite porous medium 329

MECHANICS. *See also* APPLIED MECHANICS
Engineering mechanics (BR) 163
Mobility of levers having uniformly distributed mass 475
Thermodynamics and statistical mechanics (BR) 647, 654

MECHANISMS. *See also* CAMS
Five-line construction for a computing linkage satisfying five precision requirements 621
Synthesis of four-bar mechanisms by the method of components ..... 22, (D) 637

METAL CREEP
Creep and fracture of metals at high temperature (BR) 492
Effect of stress on creep at high temperatures ..... 207, (D) 643
Stress distributions in rotating disks subjected to creep at elevated temperature 299

METAL FAILURES
Defects and failures of metals (BR) 656
Failure of machine parts (BR) 655

METAL FATIGUE. *See also* METAL TESTING—FATIGUE
Fatigue in aircraft structures (BR) 653
Propagation of fatigue cracks (D) 160
Theoretical criterion for the fracture of metals under combined alternating stresses ..... 77, (D) 640

METAL FORMING
New method for the construction of Hencky-Prandtl nets 81

METAL TESTING
Specific damping energy of fixed-fixed beam specimens 426

METAL TESTING—FATIGUE
Statistical appraisal of the Prot method for determination of fatigue endurance limit 214

METALLOGRAPHY
Theory of yield point and transition temperature of mild steel (D) 155

METEORS. *See* PENETRATION

MIKLOWITZ, JULIUS
Longitudinal impact of a semi-infinite circular elastic bar (D) 636
Propagation of compressional waves in a dispersive elastic rod
Part I—Results from the theory 231
Part II—Experimental results and comparison with theory 240

MILBRADT, K. P.
Collapse strength of redundant beams after lateral buckling 283

MILLER, D. R.
Momentum diffusion from a slot jet into a moving secondary (D) 321

MINDLIN, R. D.
Dependence of frequency spectrum of a circular disk on Poisson's ratio (D) 641
Influence of width on velocities of long waves in plates 541
Stress-strain relations and vibrations of a granular medium 585

MODELS
Analog computer for nonlinear system with hysteresis 245
Theory for base pressures in transonic and supersonic flow (D) 484

MORGAN, G. W.
Vibrations of cylindrical shells with rotatory inertia and shear (AC) 162

MOSZYNSKI, J. R.
High speed flight (BR) 655

MOTOR VEHICLES
Forced lateral oscillations of trailers 515

MYKLESTAD, N. O.
Engineering mechanics (BR) 163

N

NAGHDI, P. M.
Stresses and displacements in an elastic-plastic wedge 98

NASH, W. A.
Buckling of initially imperfect cylindrical shells subject to torsion.....125, 632

NEOU, CHING-YUAN
Direct method for determining Airy polynomial stress functions..... 387

NETS. *See* GRAPHICAL METHODS

NETWORKS. *See* ELECTRIC ANALOGY

NISEWANGER, C. R.
Propagation of compressional waves in a dispersive elastic rod. Part II—Experimental results and comparison with theory..... 240

NOMOGRAMS. *See* GRAPHICAL METHODS

NONLINEAR SYSTEMS
Analog computer for nonlinear system with hysteresis..... 245

NOWINSKI, J.
Pretwisted beams and columns (D)..... 162

NOZZLES
Ideal reducers and nozzle flares..... 137

O

OKUBO, H.
Stress-concentration factors in shafts.... 313

OPPENHEIM, A. K.
The state principle—some general aspects of relationships among properties of systems (D)..... 626

OROWAN, E.
Theoretical criterion for fracture of metals under combined alternating stresses (D)..... 640

OSCILLATION. *See* VIBRATION

OSGOOD, WILLIAM R.
Elasticity, fracture, and flow with engineering and geological applications (BR)..... 650

OSTERLE, J. F.
Effect of lubricant inertia in journal-bearing lubrication..... 494
Momentum diffusion from a slot jet into a moving secondary (AC)..... 322

P

PAI, S. I.
Proceedings of the Fourth Midwestern Conference on Fluid Mechanics (BR).. 327

PARIA, GUNADHAR
Mixed boundary-value problem of elasticity with parabolic boundary..... 122

PASCHKIS, VICTOR
Simple procedure for improved accuracy in the resistor-network solution of Laplace's and Poisson's equation (D)... 639

PASLAY, P. R.
Calendering of a viscoelastic material... 602
Forced lateral oscillations of trailers.... 515

PELL, W. H.
Graphical solution of single-degree-of-freedom vibration problem with arbitrary damping and restoring forces... 311

PENETRATION
Some new data on high-speed impact phenomena..... 65

PERLS, T. A.
Effect of spring mass on contact-accelerometer responses (D)..... 321

PERRONE, NICHOLAS
Yield loads of slabs with reinforced cutouts.....85, 634

PHASE RULE. *See* THERMODYNAMICS

PHOTOELASTICITY
Experiments for the determination of transient stress and strain distributions in two-dimensional problems..... 69
Photoelastic study of maximum tensile stresses in simply supported short beams under central transverse impact 509
Photoelastic study of strain waves caused by cavitation..... 340
Photothermoelasticity: an exploratory study..... 355

PHOTOGRAPHY. *See* PHOTOELASTICITY

PIAN, T. H. H.
Structural damping of a simple built-up beam with riveted joints in bending... 35

PINKEL, BENJAMIN
Principles of turbomachinery (BR)..... 327

PIPE BENDS
Stiffness of curved circular tubes with internal pressure (D)..... 153

PLASTICITY. *See also* STRESSES AND STRAINS, THERMAL STRESSES
Displacements in a wide curved bar subjected to pure elastic-plastic bending.. 447
New method for the construction of Hencky-Prandtl nets..... 81
New method of analyzing stresses and strains in work-hardening plastic solids (D)..... 481
On the plane plastic flow of an inset block 457
On the principle of Haar and von Karman in statically determinate problems of plasticity..... 461

PLASTICS
Calendering of a viscoelastic material... 602

PLATES. *See also* STRUCTURES
Analysis of stresses and strains near the end of a crack traversing a plate..... 361
Axisymmetrical bending of circular plates under simultaneous action of lateral load, force in the middle plane, and elastic foundation..... 141
Buckling of rectangular plates with two unsupported edges..... 537
Dynamic response of beams and plates to rapid heating..... 413
Effect of a circular hole on the pure twist of an infinite strip..... 115
Elastoplastic thermal-stress analysis of a free-plate (D)..... 162
Finite twisting and bending of thin rectangular elastic plates..... 391
Force in the plane of two joined semi-infinite plates..... 582
Nodal patterns of the free flexural vibrations of stiffened plates..... 526
Note on Way's large-deflection solution for the uniformly loaded and clamped circular plate..... 151
Reflection of dilatational waves at the edge of a plate..... 219
Response of beams and plates to random loads..... 46
Solution of some problems in bending of thin clamped plates by means of the method of Muskhelishvili..... 295
Stress concentrations in a strip under tension and containing two pairs of semicircular notches placed on the edges symmetrically..... 565
Stress solutions for an infinite plate with triangular inlay (D)..... 324
Stresses in a perforated strip..... 365
Uniformly loaded circular plates with a central hole and both edges supported. 306

POISSON'S RATIO. *See* VIBRATION

PORITSKY, H.
Point source and point vortex in the hodograph plane..... 183

POWELL, R. A.
Point source and point vortex in the hodograph plane..... 183

POWER PLANTS—NUCLEAR
Progress in nuclear energy. Series II—Reactors (BR)..... 653

PRAGER, WILLIAM
New method of analyzing stresses and strains in work-hardening plastic solids (AC)..... 483

PRANDTL NUMBER. *See* FLOW OF FLUIDS, HEAT TRANSFER

PROJECTILES. *See* PENETRATION

PROPERTIES OF MATERIALS
Science of engineering materials (BR).. 655

PROT METHOD. *See* METAL TESTING—FATIGUE

R

RANOV, THEODOR
Theoretical analysis of viscous flow in narrowly spaced radial diffuser (D)... 645

REDSHAW, S. C.
Simple procedure for improved accuracy in the resistor-network solution of Laplace's and Poisson's equation (D)... 639

REDUCERS. *See* SHELLS

REISSNER, ERIC
Finite twisting and bending of thin rectangular elastic plates..... 381

RICHARDSON, E. A.
Some effects of vortex formation in the wake of a suspended cylindrical cable (D)..... 485

RILEY, W. F.
Experiments for the determination of transient stress and strain distributions in two-dimensional problems..... 69

RINGLEB, F. O.
Motion and stress of an elastic cable due to impact..... 417

RINGS
Design charts for symmetrical ring girders..... 144
Numerical procedure for calculating the large deflections of straight and curved beams..... 289

RIPPERGER, E. A.
Study of the propagation of flexural waves in elastic beams..... 431

ROBERTSON, J. M.
Effect of adverse pressure gradients on turbulent boundary layers in axisymmetric conduits..... 191

ROBINSON, A. R.
Thermal drift of floated gyroscopes..... 506

RODABAUGH, E. C.
Stiffness of curved circular tubes with internal pressure (D)..... 153

ROLLING
Calendering of a viscoelastic material... 602

RONGVED, LEIF
Dislocation over a bounded plane area in an infinite solid..... 252
Force in the plane of two joined semi-infinite plates..... 582

ROSENAUER, N.
Synthesis of four-bar mechanisms by the method of components (D)..... 637

ROSS, E. W., JR.
On effect of boundary and loading conditions in the limit analysis of plastic structures..... 314
On the plane plastic flow of an inset block 457

ROTORS
Analysis of creep in rotating disks based on the Tresca criterion and associated flow rule (D)..... 155
Nonuniform rim-stress conditions for a rotating solid of uniform stress..... 149
Stress distributions in rotating disks subjected to creep at elevated temperature 299

S

SAIBEL, E. A.
Effect of lubricant inertia in journal-bearing lubrication..... 494

SAINT VENANT'S PRINCIPLE. *See* MATHEMATICS

SANKEY, G. O.
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (AC)..... 159

SCHWEIZER, BERTHOLD
Ideal reducers and nozzle flares..... 137

SEAMES, A. E.
Numerical procedure for calculating the large deflections of straight and curved beams..... 289

SECTOR PROBLEM. *See* MATHEMATICS

SEIDE, PAUL
Donnell type theory for asymmetrical bending and buckling of thin conical shells..... 547
Elastoplastic thermal-stress analysis of a free-plate (D)..... 162

SEVIN, EUGENE
Min-max solutions for the linear mass-spring system..... 131

SHAFFER, BERNARD W.
Displacements in a wide curved bar subjected to pure elastic-plastic bending.. 447

SHAFTS
Note on torsion of circular shafts of variable diameter..... 477
Stress-concentration factors in shafts.. 313

SHAPIRO, ASCHER H.
Gas dynamics (BR)..... 648

SHARMA, R. L.
Dependence of the frequency spectrum of a circular disk on Poisson's ratio...53, 642

SHELLS
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness..... 376
Behavior of cylinders with initial shell deflection..... 559
Buckling of initially imperfect cylindrical shells subject to torsion.....125, (D) 632
Buckling of thin cylindrical shell under hoop stresses varying in axial direction 405
Cylindrical shells under line load..... 553
Deformation of elastic paraboloidal shells of revolution..... 397
Donnell type theory for asymmetrical bending and buckling of thin conical shells..... 547
Elementare Schalenstatik (BR)..... 656
General instability of a ring-stiffened,

SHELLS (*continued*)
circular cylindrical shell under hydrostatic pressure ... 269
Ideal reducers and nozzle flares ... 137
Minimum weight design of cylindrical shells (D) ... 486
On radial deflections of a cylinder subjected to equal and opposite concentrated radial loads ... 278
Vibrations of cylindrical shells with rotatory inertia and shear (D) ... 162

SHERBY, O. D.
Effect of stress on creep at high temperatures ... 207, 644

SHORT, R. D., JR.
Behavior of cylinders with initial shell deflection ... 559

SHULESHKO, P.
Buckling of rectangular plates with two unsupported edges ... 537

SKALAK, RICHARD
Longitudinal impact of a semi-infinite circular elastic bar ... 59, 637

SLABS. *See* STRUCTURES

SLIBAR, A.
Forced lateral oscillations of trailers ... 515

SMITH, J. LE CONTE, JR.
Head loss in flow through a cyclone dust separator or vortex chamber (D) ... 642

SOIL MECHANICS
Elastic coefficients of the theory of consolidation ... 594

SPHERES
Compressibility of a sphere pack—comparison of theory and experiment ... 148
Stress-strain relations and vibrations of a granular medium ... 585

SPRINGS
Effect of elastic racks on vibration mounting of equipment ... 617
Effect of spring mass on contact-accelerometer responses (D) ... 321
Forced vibration of systems with nonlinear, nonsymmetrical characteristics ... 435

STARR, C. D.
Effect of stress on creep at high temperatures (D) ... 643

STATE PRINCIPLE. *See* THERMODYNAMICS

STATORS. *See* ELECTRIC MOTORS

STEEL
Theory of yield point and transition temperature of mild steel (D) ... 155

STEIDEL, R. F., JR.
Some effects of vortex formation in the wake of a suspended cylindrical cable (AC) ... 486

STERNBERG, E.
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness ... 376
Thermal stresses in infinite elastic disks (D) ... 487

STRANG, W. G.
Improvement of the Holzer table based on a suggestion of Rayleigh's ... 228

STRESSES AND STRAINS. *See also* BUCKLING, CREEP OF MATERIALS, ELASTICITY, IMPACT, METAL CREEP, PLASTICITY, PLATES, ROTORS, THERMAL STRESSES, TORSION, WAVE MECHANICS
Analysis of stresses and strains near the end of a crack traversing a plate ... 361
Behavior of cylinders with initial shell deflection ... 559
Creep and fracture of metals at high temperature (BR) ... 492
Cylindrical shells under line load ... 553
Direct method for determining Airy polynomial stress functions ... 387
Effect of a circular hole on the pure twist of an infinite strip ... 115
Experiments for the determination of transient stress and strain distributions in two-dimensional problems ... 69
Force in the plane of two joined semi-infinite plates ... 582
Improved nomogram for the ratios of the octahedral to the maximum shearing stresses (D) ... 160
Interaction curves for shear and bending of plastic beams ... 453
Minimum weight design of cylindrical shells (D) ... 486
Motion and stress of an elastic cable due to impact ... 417
New method of analyzing stresses and strains in work-hardening plastic solids (D) ... 481
On the stress distribution at the base of a stationary crack ... 109
Photoelastic study of strain waves caused by cavitation ... 340
Rational analysis of heat-exchanger tube-sheet stresses (D) ... 315

STRESSES AND STRAINS (*continued*)
Reduction of three-dimensional stress distributions to two-dimensional analysis by superposition ... 478
Saint Venant's principle: a biharmonic eigenvalue problem ... 381
Some mixed boundary-value problems of the semi-infinite strip ... 261
Stress-concentration factors in shafts ... 313
Stress concentrations in a strip under tension and containing two pairs of semicircular notches placed on the edges symmetrically ... 565
Stress-strain relations and vibrations of a granular medium ... 585
Stresses and displacements in an elastic-plastic wedge ... 98, (D) 631
Stresses in a perforated strip ... 365
Stresses in aircraft and shell structures (BR) ... 490
Stresses in beams during transverse impact ... 440
The sector problem ... 574
Theoretical criterion for the fracture of metals under combined alternating stresses ... 77, (D) 640
Theory of adhesive scarf joints ... 255, (D) 644
Theory of yield point and transition temperature of mild steel (D) ... 155
Yield loads of slabs with reinforced cutouts ... 85, (D) 634

STRINGS. *See* VIBRATION

STRIPS. *See* PLATES

STRUBLE, R. A.
Ideal reducers and nozzle flares ... 137

STRUCTURES. *See also* AIRPLANES, BEAMS, SHELLS
Aeroelasticity (BR) ... 326
Analysis of structures (BR) ... 647
Beams of uniform strength subjected to uniformly distributed loading ... 105
Design charts for symmetrical ring girders ... 144
Mathematical analysis of bow girders of any shape (D) ... 489
Negative group velocities in continuous structures ... 622
On effect of boundary and loading conditions in the limit analysis of plastic structures ... 314
Plastic method of structural analysis (BR) ... 648
Response of mechanical systems to random excitation ... 248
Symmetrical buckling of a series of uniformly loaded parallel struts supported by spot connections to a long thin plate ... 531
Yield loads of slabs with reinforced cutouts ... 85, (D) 634

STRUTS. *See* STRUCTURES

STUDERUS, C. J.
Vibration modes of stators of induction motors (D) ... 633

SUCTION. *See* FLOW OF FLUIDS

SUPERSONIC FLOW. *See also* COMPRESSORS
Theory for base pressures in transonic and supersonic flow (D) ... 484

SUTTON, G. W.
Photoelastic study of strain waves caused by cavitation ... 340

SYMONDS, P. S.
Analysis of structures (BR) ... 647

T

TAMATE, OSAMU
Effect of a circular hole on the pure twist of an infinite strip ... 115

THERMAL STRESSES
Axisymmetric thermal stresses in a spherical shell of arbitrary thickness ... 376
Buckling of thin cylindrical shell under hoop stresses varying in axial direction ... 405
Dynamic response of beams and plates to rapid heating ... 413
Elastoplastic thermal-stress analysis of a free-plate (D) ... 162
Photothermoelasticity: an exploratory study ... 355
Thermal stress and deformation ... 467
Thermal stresses in infinite elastic disks (D) ... 487

THERMODYNAMICS
The state principle—some general aspects of the relationships among the properties of systems ... 29, (D) 625
Thermodynamics and statistical mechanics (BR) ... 647, 654

THOMPSON, J. S.
Some new data on high-speed impact phenomena ... 65

THOMSEN, E. G.
New method for the construction of Hencky-Prandtl nets ... 81

THOMSEN, J. S.
The state principle—some general aspects of relationships among properties of systems (D) ... 627

THOMSON, W. T.
Analog computer for nonlinear system with hysteresis ... 345
Response of mechanical systems to random excitation ... 248

TIMOSHENKO, STEPHEN P.
Timoshenko Medal Award established by ASME ... 493

TING, L.
On radial deflections of a cylinder subjected to equal and opposite concentrated radial loads ... 278

TORSION
Buckling of initially imperfect cylindrical shells subject to torsion ... 125, (D) 632
Note on torsion of circular shafts of variable diameter ... 477

TRAILERS. *See* MOTOR VEHICLES

TREFETHEN, LLOYD
Momentum transfer in fluids (BR) ... 654

TRIBUS, MYRON
The state principle—some general aspects of relationships among properties of systems (D) ... 627

TRUMPLER, P. R.
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (D) ... 158

TU, YIH-O
On the antisymmetric vibrations of a beam carrying a distributed added mass 312

TUBES
Creep of thick tubes under internal pressure ... 464

TURBOMACHINERY
Principles of turbomachinery (BR) ... 327

TURBULENCE. *See* FLOW OF FLUIDS

V

VAN VALKENBURG, M. E.
Some new data on high-speed impact phenomena ... 65

VASARHELYI, D. D.
Yield loads of slabs with reinforced cutouts (D) ... 634

VIBRATION. *See also* WAVE MECHANICS
Dependence of the frequency spectrum of a circular disk on Poisson's ratio ... 53, (D) 641
Dynamic response of beams and plates to rapid heating ... 413
Effect of spring mass on contact-accelerometer responses (D) ... 321
Elongating string under the action of a transverse force ... 609
Forced lateral oscillations of trailers ... 515
Forced vibration of a body on an elastic stratum ... 55
Forced vibration of systems with nonlinear, nonsymmetrical characteristics ... 435
Fundamentals of vibration analysis (BR) 490
Graphical solution of single-degree-of-freedom vibration problem with arbitrary damping and restoring forces ... 311
Improvement of the Holzer table based on a suggestion of Rayleigh's ... 228
Longitudinal impact of a semi-infinite circular elastic bar ... 59, (D) 635
Mechanical vibrations (BR) ... 326
Nodal patterns of the free flexural vibrations of stiffened plates ... 526
On the antisymmetric vibrations of a beam carrying a distributed added mass ... 312
On the theory of the acceleration damper (D) ... 322
Practical solutions of torsional vibration problems (BR) ... 653
Response of beams and plates to random loads ... 46
Response of mechanical systems to random excitation ... 248
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (D) ... 158
Some effects of vortex formation in the wake of a suspended cylindrical cable (D) ... 485
Specific damping energy of fixed-fixed beam specimens ... 426
Stress-strain relations and vibrations of a granular medium ... 585
Structural damping of a simple built-up beam with riveted joints in bending ... 35
Superharmonic oscillations as solutions to Duffing's equation as solved by an electronic differential analyzer ... 520

VIBRATION (*continued*)
Type of flame-excited oscillation in a tube 333
Vibration modes of stators of induction motors....39, (D) 633
Vibrations of cylindrical shells with rotatory inertia and shear (D)..... 162

VIBRATION MOUNTINGS
Effect of elastic racks on vibration mounting of equipment..... 617

VISCOMETERS
Corrections for the oscillating-disk viscometer....197, (D) 643

VISCOSITY. *See* ELASTICITY

VOLTERRA, ENRICO
Mathematical analysis of bow girders of any shape (D)..... 489

VORTEX CHAMBERS. *See* DUST SEPARATORS

W

WADSWORTH, N. J.
Propagation of fatigue cracks (D)..... 161

WAHL, A. M.
Analysis of creep in rotating disks based on the Tresca criterion and associated flow rule (AC)..... 155
Stress distributions in rotating disks subjected to creep at elevated temperature 299

WANG, H. E.
Corrections for the oscillating-disk viscometer....197, 643

WARBURTON, G. B.
Forced vibration of a body on an elastic stratum..... 55
On the theory of the acceleration damper (D)..... 322

WARNER, P. C.
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (D)..... 158

WAVE MECHANICS
Influence of width on velocities of long waves in plates..... 541
Negative group velocities in continuous structures..... 622
Propagation of compressional waves in a dispersive elastic rod
Part I—Results from the theory..... 231
Part II—Experimental results and comparison with theory..... 240
Reflection of dilatational waves at the edge of a plate..... 219
Response of nonlinearly supported boundaries to shock waves..... 501
Stress-strain relations and vibrations of a granular medium..... 585
Study of the propagation of flexural waves in elastic beams..... 431

WEBER, H. E.
Head loss in flow through a cyclone dust separator or vortex chamber....16, 643

WEINER, JEROME
Elastoplastic thermal-stress analysis of a free-plate (AC)..... 162

WEINIG, F. S.
New approach to the theory of thin, slightly cambered profiles..... 177

WEINSTEIN, A. S.
Momentum diffusion from a slot jet into a moving secondary (AC)..... 322

WEIR, C. D.
Creep of thick tubes under internal pressure..... 464

WELANETZ, L. F.
Suction device using air under pressure (AC)..... 158

WILLIAMS, M. L.
On the stress distribution at the base of a stationary crack..... 109

WILLIS, D. G.
Elastic coefficients of the theory of consolidation..... 594

WISEMAN, C. D.
Effect of stress on creep at high temperatures....207, 644

WOOLARD, HENRY W.
Theoretical analysis of the viscous flow in a narrowly spaced radial diffuser 9, 645

Y

YOKOBORI, TAKEO
Theoretical criterion for the fracture of metals under combined alternating stresses....77, 640

YU, YI-YUAN
Axisymmetrical bending of circular plates under simultaneous action of lateral load, force in the middle plane, and elastic foundation..... 141
Rational analysis of heat-exchanger tube-sheet stresses (AC)..... 318

YUAN, S. W.
On radial deflections of a cylinder subjected to equal and opposite concentrated radial loads..... 278

Z

ZAID, M.
Suction device using air under pressure (D)..... 156

ZIZICAS, G. A.
Improved nomogram for the ratios of the octahedral to the maximum shearing stresses (D)..... 160
Reduction of three-dimensional stress distributions to two-dimensional analysis by superposition..... 478